Gender, Stress, & Coping in the U.S. Military

Volume IV

Training, Deployment and Contingency Stressors

Department of Psychiatry
F. Edward Hébert School of Medicine
Uniformed Services University of the Health Sciences
Bethesda, Maryland 20814-4799

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"Stress and Women's Health: Combat, Deployment, Contingency Operations and Trauma"

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ACKNOWLEDGMENTS

In order to understand the effects of combat, deployment and contingency operations on women's health, the support of a wide array of people and institutions is required. Our gratitude goes to all those who have supported us in this work. The most important are those men and women from all the Armed Services who have participated in studies which expand our knowledge in this area. We are indebted to them for taking time to assist us in these efforts. Our thanks go also to the cadre of military and civilian personnel who authorized our involvement and encouraged our work. We would like to specifically recognize the Surgeon General of the Air Force, Lt Gen Edgar R. Anderson, and Lt Col Daniel R. Brown, Research Programs Officer for the Air Force Medical Operations Agency, for their support.

We are grateful to all the civilian and military experts who shared their observations on military women's health from a variety of perspectives. Their candor and valuable insights will provide guidance on a wide range of topics bearing on the physical and mental health of our military women and men.

Finally, a number of individuals, through their personal support and efforts, have fostered the development of the studies and recognized their importance to both the military and civilian communities. In particular, we wish to thank Drs. James Zimble, Jay P. Sanford, Nancy Gary, Val Hemming, Harry Holloway, David H. Marlowe, M. Richard Fragala, Normund Wong, Sidney M. Blair, James R. Rundell, Michael P. Dinneen and James E. McCarroll. Their vision of the importance of understanding the effects of trauma and disaster on health and their personal and administrative support have sustained out work. We hope that increased understanding of overall and gender-specific stressors involved with trauma and combat stress will enhance the ability of individual servicewomen to care for themselves within an institution that is informed of and concerned with their needs. Educational and preventive measures resulting in servicewomen assuming informed responsibility for their health needs within the context of a supportive group system parallels the process of fostering individual initiative and group cohesion that is essential to mission performance on aircraft, ships, and battlefields.

INTRODUCTION

Military leaders have long recognized that mission readiness requires both the absence of disease and the presence of mental, physical, and spiritual health. However, little is presently known about the health of military women, particularly as it may be uniquely affected by trauma and war. Such knowledge is essential to meeting the health needs of military women for all mission contingencies. These missions include: peacekeeping and peacemaking activities (e.g., the Sinai MFO Treaty, Somalia); humanitarian aid (care of civilian refugees following the Persian Gulf War; natural and human-made disasters including assistance in Hurricane Andrew, the Los Angeles riots, threats of chemical terrorist attack, and the Oklahoma City bombing); and potential combat. As the number of active duty women increases (approximately 10% in 1995), women are assuming critical positions of responsibility which fully expose them to the hazards of combat and war.

The systematic study of the effects of trauma on women's health is important for women in all branches of service. There is a close interplay between performance, health and psychosocial factors in responding to trauma, disaster, and combat. Understanding the gender-specific responses associated with traumatic stress is important for the development of command policy, training scenarios, and medical care procedures. However, little is presently known about how the health of military women may be uniquely affected by trauma and war.

Available data on responses to various traumatic events can serve as an analog to aid in understanding some of the potential effects of war and combat on military women. The higher base rates of psychiatric illness in women, their greater social supports (although the relationship to unit cohesion in women is less clear), higher distress after exposure to death and the grotesque may be expected to alter responses to combat, deployment, and military contingencies compared to that in men. In addition, differences in fatigue, chronic stress tolerance, effects of sleep deprivation and variation of stress effects across the menstrual cycle can increase or decrease stress tolerance and health effects. Overall, empirical studies in this area is greatly needed.

This volume is the fourth in our series of publications deriving from discussions with national and international experts to increase our understanding of gender, stress, and coping in the US military. It contains edited transcripts of round-table discussions with scientists from a broad range of backgrounds on topics pertaining to training, deployment and contingency stressors. The presentations include observations and data from individuals with special expertise on the topic. They provide important insights into research hypotheses which have been explored already and inform readers on questions which should be examined in the future.

PTSD in Women

Jessica Wolfe, Ph.D.

Today we are pleased to welcome Dr. Jessica Wolfe to our Consultation Session. Dr. Wolfe's background includes a BA from Stanford University, as well as a Ph.D. in Psychology from Columbia. She proceeded to do post-doctoral training in neuropsychology at the Boston VA and presently holds a number of positions and appointments to include the Director of the Women Veterans PTSD program at the National Center for Post-Traumatic Stress Disorder. Dr. Wolfe has also received a number of research grants and awards. I notice here that in 1991, Dr. Wolfe received the Vietnam Veterans of America Award for outstanding contributions to women veterans. This hones nicely to our topic of interest in terms of the Department of Defense, women, and women's health research.

Before we get started, maybe it would be helpful for you if we introduced ourselves.

DR. ROSENBERG: I'm Florence Rosenberg, a sociologist.

DR. MARTIN: Jim Martin. I'm a social worker at Bryn Mawr College in Pennsylvania.

DR. ELL: Kathy Ell, I'm the Director of the Institute for the Advancement of Social Work Research here in Washington.

DR. URSANO: Bob Ursano.

DR. GABBAY: Frances Gabbay. I'm a psychologist here in the Department of Medical and Clinical Psychology.

DR. SLUSARCICK: Anita Slusarcick, I'm a psychologist in the Psychiatry Department here.

MS. LEVINSON: Cathy Levinson, I'm a clinical social worker here in Psychiatry.

DR. FULLERTON: Carol Fullerton. I'm a psychologist in the Department of Psychiatry, Research.

MAJ SUTTON: I'm Loree Sutton. I'm a psychiatrist here in the Department. Welcome. We would certainly like to keep this informal and let you present whatever you would like to. We will have lots of questions for you. I think we're slated from now until 2:00pm.

DR. WOLFE: I used to think that I had nothing to say (which is probably still the case), but as I've gotten a chance to meet with more groups of people from different backgrounds and different occupational settings, I find that there are more and more topics of potential collaboration and conversation that we could have. I wanted to mention that I just got back from three days at Quantico, Virginia with the Marines. What happened was very interesting. They have this thing called the Russell Leadership Conference which they've been doing for 15 years and it's usually on some either boring or pithy topic. This year the major who was tasked with running it said, "well, I'm not doing it on a boring topic like performance evaluation." So he named the theme, "Diversity, the Strength of our Corps." The topic was the challenge of diversity for the Marine Corps for the 21st Century. When I heard about this, I thought this was very funny because I said, "oh, I bet I know what diversity means for the Marines. It's women." It turned out it was actually women and people of color.

One of my bosses in the VA (Veterans Affairs) Central Office who is a physician was supposed to go but she couldn't. At the last minute, she said, "I'm going to nominate you to the Commandant. I think you should go, because you do more research on women and you're in the field." I went and I spent three days with them and it was very interesting. They put me up at the FBI Academy where they held the conference. The most interesting part was that there were senior enlisted personnel and officers all the way up through three star generals participating. It was a very small group. There were 80 people and they had four civilian experts. I was the civilian expert on women.

I thought that it would be largely pro forma and that they would not seriously address any issues related to women; certainly not harassment, assault in the military, or homosexuality. It turned out that it was "no holds barred." We had expert panels and then broke into discussion or focus groups for two days. The group that I led focusing on women included a brigadier general, who is a Marine fighter pilot. We had the most interesting discussions of what it was like for women currently in the military and in the Marine Corps in particular.

What I found to be terribly interesting was that they were very, very interested and open to discussing issues of stress, integration of training, psychological effects, health effects of multiple rapid deployments, peacekeeping mission effects, and low intensity conflicts. They feel that they are, as is everyone, affected by downsizing. Because they are such a small branch, they cannot really afford to lose a lot of the people that they put their money into for training. They shared something very interesting with me which is that, initially, everyone said, "no, no, no, there's not much harassment and there's not much gender-related stuff in the military, it's not a problem." As the two days went on, they said, "well, actually we have quite a bit of a problem and we're trying to address it."

This was a mixed group. It was white, black, men, women, young, old. They actually were able to talk about experiences that they had either seen as commanders or experienced personally themselves related to gender, experiences of harassment or assault. They also talked about things such as the effects of single parenting and the very high rates of young marriages, high divorce, pregnancy, and drug use - all of the problems that are in our society that are now in active duty populations. These are people that are the veterans of tomorrow.

What they said to me at the end of the conference was that they are increasingly realizing that despite the fact that they don't have budgets for this, they are becoming a social service agency. They are in the daycare business. They are now dealing with the issue of pregnancy before rapid deployment. They had many very interesting experiences in Somalia where they had women in command of combat support units who took on sniper fire. The men over-reacted and covered the woman who was in a command position. She said, "don't!" Unit efficiency was ruined and they were in jeopardy because of it. They really wanted to ask me more about what I thought about how this is going to work and how you can eradicate either differences in perception or actual differences in role and differences in ability. The group indicated that they're struggling with whether training needs to be done separately or if that, in fact, only reinforces old paradigms and stereotypes and whether training and operations should be done together.

This conference made me really think about some of the research I do, because we were talking about the issue of women reporting higher symptom levels. I have a particular interest in my research not being misconstrued to indicate that, because women endorse higher symptom levels on some measures, it necessarily is equatable with the conclusion that they are more impaired. I think that we don't know that. I think we don't know (and I want to say this as a caveat before I begin) what it means wholly when we use a lot of self-report measures. We ask people to respond to symptoms or functional status questions on standardized instruments that may have been developed for other populations or at another point in time, or for a particular ethnic or gender group.

So I'm going to show you a number of things today. I would like you to keep that in mind and just jump in at any point to ask me questions and discuss things with me about the implications of some of this. I think it's very interesting to think about where we're going.

You all are highly familiar, I'm sure, with the DSM criteria for PTSD. I'm going to touch on it really briefly because I want to make a point about gender in terms of how it relates to some of the work we're doing. Basically, as you all know, the definition of PTSD has been around for a really long time, probably referenced as early as the Iliad and the Odyssey. The term has been kicking around for a couple thousand years and it's written about in the 1500's in Shakespearean literature. The important point for me when I went back and reviewed all of this was my realization that the definition came largely out of a definition of combat experiences. As such, it was predicated largely on the combat and infantry experiences of men. That doesn't make it wrong or bad. I'm not making a value judgment here, but I think it's an interesting point in terms of thinking about how we currently apply it.

Then as you know, the PTSD definition went through a series of iterations. It was seen as something that was specific to the situation, a gross stress reaction. In a more neurotic vein in the 1960's it was seen as something wrong intrapsychically with the individual; that they were having a problem with adjustment so that the onus was on the person, per se, rather than on the person's stress or interactions.

By the time we got to DSM-III in the eighties, for the first time there was a highlighting in the psychiatric nomenclature emphasizing looking at PTSD as related to an external event. Specifically, an event described as extremely stressful and uncommon. From what I understand of psychiatric nomenclature, I think it is the only disorder which is characterized that way. There are no other disorders that aren't construed as arising either idiopathically or from some disease process. This disorder is the only one that is really predicated on having this external experience. I think this raises a lot of the issues for us clinically and in research. How then do you evaluate, "how bad is bad?" for an external event. Additionally, what happens when you're getting into an interaction between an external event that is bad and the person's particular reaction or symptom pattern that they have to show to qualify for a diagnosis? How much of this then gets into subjective realms of diagnosis? There is also the issue of perception and attributions by the individual person about, "how bad was bad?"

I think it was an improvement in '87 when they got to talking about the fact that the event had to be outside of the range of usual human experience and that it would be markedly distressing to almost anybody. I think the expansion now with DSM-IV (which came out in June) helped qualify things a little bit further. It stated that you could have a witnessing experience instead of only direct exposure, i.e. having it happen to you personally. Additionally, the witness's response had to involve the experiences of helplessness, horror and profound fear. In other words, the exposure alone wasn't sufficient. It had to do with the exposure combined with your response to the event.

I think the witnessing part in particular has some gender implications. Although I would be interested to see what you think as a sociologist, some of my research from the Gulf suggests (at least in the sample that I had) that women were more sensitized to the witnessing of death and dying and horrific events including severe injury in others than were men. Women were also more likely to attribute such events as traumatic stressors for them in the etiology or genesis of their symptoms than were men. We don't know that the women didn't see different things than the men, but, in fact, in my sample the women are intermixed in the same units. It's an interesting issue to think about including witnessing as a criterion. I actually think it was driven, in part, by the experiences of people who said, "well, it didn't happen to me personally but I saw it and that was distressing," -- like emergency medical personnel.

Again, this is not rocket science at all. I always vacillate somewhere in this, but I'm somewhere between an event-person model in my interest in the characteristics of the external event, and what we know about stress from clinical practice and research; and then what we know increasingly about individual characteristics that predispose to traumatic response when faced with an event of that caliber.

I guess there are many ways to look at PTSD. You can look at it just phenomenologically in terms of the event. Some of the things that we know from research, that I'm sure many of you have read, is that generally speaking, if you're really going to grossly classify things, PTSD usually has something to do with the duration, severity and intensity of an event that are predictors of poorer outcome or predictors of traumatic responses following exposure. The best examples of that are in wartime, exposure to high levels of dead bodies or death and dying. Also I've done a lot of work with the Boston Fire Department and Boston Police and they always will tell you that the worst fires for them are the ones that involve children. Events such as those involving children that are severely injured or maimed, combined with the perception or the actual experience that your life, itself, is in danger are strong predictors of PTSD. This is particularly characteristic of people in a war zone when they tell you they thought they were going to die. It's been well-substantiated in the rape literature in women where perceived or actual threat to life and physical injury are about the two strongest predictors of PTSD among all of the variables, overriding the contribution of whether you knew the perpetrator or not.

There isn't a lot of research, if any, looking at how men and women might differ in their response to the event characteristics. In most of the research that has come out (well, Bob has done some research in civilian samples and people like Bonnie Green have done research in Buffalo Creek) there are a variety of natural disaster samples and technological manmade disasters that have both men and women in them, naturally. Those are probably some of the few areas where we can look at both genders in the sample and examine their response. It still doesn't help us determine how they understand the meaning of that response, or how we take into account the differences in personal impact of the event, but at least it gives us a little bit more of a beginning baseline. We know that they were there together, in contrast to the war literature, which up until recently was largely men. Even now women are not really deployed in combat units and this creates a sort of differential characteristic for exposure. It's hard to know if the exposures are equatable. I'm bringing this up now because I'm going to show you some prevalence rates later on for men and women where it does look like, grossly speaking, that women have higher rates of PTSD in both civilian and military samples. I want to talk about reasons why that may or may not be artifactual.

In terms of the individual characteristics (and feel free to join in if you think there are other things we want to add here) I don't think there is any one thing that has turned out to predict more than anything else about individual characteristics. I just finished this chapter I was mentioning. I looked at the child literature in PTSD that says, if you leave gender aside, the younger children do worse. There is another whole group of studies that says the younger children do better because they're more resilient and they use family supports better. My impression is that over time, the individual characteristics are affected a lot by how they mediate or influence each other. If you have a younger age, but you have good parental stability and family support, that buffers sometimes.

Family background in terms of mental health history has turned out to be a predictor of PTSD, but only of a small magnitude. Families that have substance abuse or anxiety disorders in them appear to have some increased risk for PTSD in the person who is subsequently exposed, but it's not huge and it doesn't account for most of the variance. There is a couple of articles that you've probably seen by Naomi Breslau over the past few years that talk about PTSD in urban samples of young men and women and family histories of that type of background or factors.

What she and some others come up with is that gender is a risk factor for PTSD. The point I want to make is that I feel that they've said that a bit glibly because we don't know what that means. Breslau has found, and to some extent Fran Norris and Heidi Resnick, that female gender appears to be associated with higher rates of PTSD in civilian samples. I think there are serious problems with this research. The main problem gets back to the data on the event side of the board; which is, that it's very difficult to equate for exposure. In the majority of cases, the higher rates of PTSD in women are coming from events usually involving sexual assault and rape; many, many fold more than in men. I will show you some statistics later which indicate that rape has a very high outcome rate for PTSD. So that's evidence that you can't equate across events. It also turns out that even when you get samples where women and men are exposed to similar events, you have some earlier developmental issues which add variables. For example, the very high rates of sexual and physical abuse in this society. Sexual assault and abuse in particular are over represented in female children (relative to boys). Does that constitute a vulnerability for response to subsequent stress reactions? We will have to learn more about this.

Genetics. I don't know if any of you have followed the work from the Vietnam Twin Registry. Has anybody seen this material? Do you know what I'm talking about?

MAJ SUTTON: I don't know it real well, but I know of it.

DR. WOLFE: Okay. I just saw another paper that came out from that group recently. For those of you who aren't familiar with it, there are now studies of the Vietnam Veteran Twin Registry, a fabulous resource of mono- and dizygotic male twins. They have, I think (Bob can tell me if I'm wrong) different classifications of pairs. They have them where both were in the Vietnam theater. They also have them where the pairs are split, where one was deployed and one wasn't. Because they have monozygotic twins, they can control for some of the genetic loading.

To date what their research has shown (I think this is published in the American Journal of Epidemiology) is that it is possible that up to about a third of the variance in PTSD outcome following traumatic stress or exposure is held by genetic contribution. We don't know what that means, genes for what? Anxiety disorders, panic? I don't know that we know what it means. About a third of the variance is accounted for by genetics, as opposed to more external events or person specific events.

I just saw another paper by them that looks at the B, C, and D criteria in terms of the genetic analysis, and the criteria vary slightly. I believe that C and D, numbing, and then to a lesser degree hyper-arousal have genetic influences and that experiencing the B criterion has somewhat less of a genetic loading. Nonetheless, they all are ranging from about 25 to 32% of the response in outcome, which I guess raises a lot of issues of what it is that you bring to a situation with yourself.

Again, some of this is probably very highly familiar to you. I was looking at the DSM-IV the other day, regarding what they are now saying about rates of PTSD. I can't remember if it's between 1 and 9% or 1 and 14%. This is a pretty old statistic. It comes out of the same Lewis ECA study which was sort of the first guesstimate on PTSD in general communities in the United States. As you can see, that prevalence is pretty low. It also was done before a lot of the criminal victimization and sexual assault research was done in this country, which has since disclosed much higher rates of PTSD for lifetime PTSD related to past victimization. I would say that the top figure really is quite conservative and is under estimated.

The interesting point, I think, to make from this slide is the variability in stress disorder rates that is stratified by event type, by stressor type. Generally speaking, natural disasters fall on the lower end of the scale. Although when I went back for this chapter and reviewed the studies I found that women in the natural disasters come up with slightly higher PTSD rates than men in the same disaster. Overall it's pretty low. Rape victims experience pretty high PTSD rates. I have some more data I will show you on that in a moment. Crime victims represent a broad spectrum, depending again on things like the variables I showed you earlier including perceived threat to life and physical injury. The higher those are, generally, the poorer the outcome.

This is some data from, (well, actually it's a combination of data from many of the people listed at the bottom of the slide) Mary Koss and Dean Kilpatrick, who did the "Rape in America" study for the National Institute of Justice; Gail Steketee and Edna Foa. I actually have heard that these rates are higher than this, what you see here. Broadly speaking, about 13% of women) will have an actual rape within their lifetime. An additional 14% (so we are talking about a quarter of all women, will have some type of sexual assault. This could be molestation or attempted rape. Roughly 12% at any given time will have rape-related PTSD. About 32%, as many as one third, will develop PTSD from the rape at some point in their life time. If you are sexually assaulted in this fashion, and you're a woman, you have about a one in three risk of getting PTSD from that event at some point in your life, which is quite a pretty high rate; I'm not an epidemiologist, so if anybody here is they should speak up.

I was thinking about this in terms of the military when I was at Quantico. One of the things they said to me is they're having a lot of attrition in boot camp. They're having a pretty high attrition rate in men, somewhere in the level of 40 to 42%, even though they have revised a lot of their basic training. Actually, I take it back, it's not 40%, it was lower than that, but it was, nonetheless, in the double digits. For women they were having attrition in some units as high as 66%. That has posed a real problem for them in terms of retention. They are really trying to look at what contributes to this.

I was talking with one of the female enlisted members who is in charge of some of the training. She said she's very concerned because when these women fail in basic training, it's another failure experience for them. They feel like they have lost out and that they've flunked out of something again. They're back on the streets because many of them come from dysfunctional backgrounds. That's why they joined the military to begin with, to get out of that environment and have a career and make some gains. I said, "well, why do you think the rate is so much higher in women?" She said it's her distinct impression from talking to a number of the women that they are prior sexual assault survivors, some from childhood, a lot from their teens. When they come into the Marines, it is often to get away from that environment in the hopes of having a better life and a career and a safe community. It's not that they're getting re-harassed or re-assaulted in the Marines, because they haven't even gotten to that point yet. What they found was happening was that in the course of basic training, the women were getting re-traumatized. They were having a re-triggering of latent PTSD symptoms related to things like people telling them that they were no good; that they were worthless and useless and that nothing good would ever happen to them. This was associated with the original sexual assault or incest. They could not tolerate those feelings and they were having an increase in the actual reexperiencing of symptoms about the original events that were not related to the boot camp experiences. In other words, the boot camp was serving as a trigger for the original events.

I asked her what could you do about that. She said that, at Parris Island, they've contacted a number of rape crisis centers and asked counselors to come and consult with them. The fact is that the counselors don't have the resources to sit on the base 24 hours a day, seven days a week to provide these kind of services.

I asked this sergeant, if she thought that any of these women would have to be let go? She believed that as many as a third, and possibly more could be retained. In other words, they weren't just bad eggs or they weren't so chronically psychiatrically distressed that they were never going to make it. She believed that between 30 and 40% could be retained if the Marines were to get some consultation and if these women were to get some treatment. She didn't know what type of treatment, but something at the time they were going through this to make the experience more bearable in a therapeutic and positive way; as opposed to training which would be experienced as another assault.

I thought that was very interesting. I don't know if any of you have impressions of that from your own branch of service or if anybody has ever talked about it. I had never heard this before.

MAJ SUTTON: I've had a number of referrals for just exactly that scenario.

DR. WOLFE: Really?

MAJ SUTTON: In fact, several referrals have come following the viewing of the movie they show everyone about how to protect themselves. It has triggered prior experiences with rape.

DR. MARTIN: There was just such a piece in the paper about the training at the Air Force Academy.

DR. WOLFE: Yes, I missed that.

DR. MARTIN: The Air Force Academy as part of their equivalent training had what was described as literally a hands-on experience for both men and women in terms of what it's like to be sexually assaulted.

DR. WOLFE: Are you kidding?

DR. MARTIN: I'm not kidding. This is training for being a prisoner of war, and it involved women being thrown on tables with male cadets getting on top of them.

DR. WOLFE: As a part of training?

DR. MARTIN: As part of training!

DR. WOLFE: Who rationalized this?

DR. MARTIN: It went on for a couple of years at the Air Force Academy. A number of people complained and the training has stopped as a result of that. Apparently it led to a number of students who left. There was no information given as to differences in males and females leaving the Academy. It made the New York Times and a couple of other newspapers.

DR. WOLFE: Fascinating, I will have to get a copy.

DR. MARTIN: I have a copy, I will fax a copy to you.

DR. WOLFE: That's fascinating because one of the things the Marines made a point of saying to me was that they were very pleased that they changed a lot of their training so that there is no hands-on any more. It's fascinating to hear.

DR. MARTIN: The other issue in that training is whether there are any differences. I assume that they're still doing single sex training.

DR. WOLFE: No, they are now moving to integrated training.

DR. MARTIN: Yes, and I'm just wondering whether that makes any difference in terms of women experiencing that in the context of men also experiencing the same kind of harassment?

DR. WOLFE: You mean whether it diminishes it?

DR. MARTIN: Yes, whether it diminishes it.

DR. WOLFE: Yes, their general impression was that it diminished a lot of things; that it took away a lot of problems. It facilitated unit cohesiveness and it seemed to break a lot of old paradigms and stereotypes that the girls need special treatment, hence they don't really count. They found that it was easier to change attitudes when there was exposure in both directions to either gender, but they're working on it. It's not an easy issue. It helped them get away from the idea that there are two classes of Marines which they said was posing a real deployment problem for them

Well, I'm fascinated about that Air Force thing.

PARTICIPANT: There's actually been a television documentary show in the last week on that.

DR. WOLFE: Somebody told me about it but I didn't see it. It wasn't "Dateline," but something like that, "Frontline?" It's hard for me to believe that this goes on.

DR. MARTIN: Right, it's role playing at its finest.

DR. WOLFE: Or something, right.

PARTICIPANT: To prepare for the real thing, what it's like to be shot and captured behind enemy lines...there are schools people go to to endure training in the event of this happening in the context of -- it's a very fine line between real world exposure and --

DR. WOLFE: This sounds like you're talking about general training right?

DR. MARTIN: This was general training.

DR. WOLFE: This isn't flyer training.

DR. MARTIN: What was being argued is that very few of these individuals were likely to be exposed to that situation versus specific training for people who are at specific risk. This was literally part of the indoctrination to the Air Force Academy.

DR. WOLFE: Did they deal with males being raped?

DR. MARTIN: Yes. Males apparently were part of the group that reacted extremely to this. They had a very hard time with this training. Particularly in the context of their being older adolescents and very young adults; this is another factor.

DR. WOLFE: They're really kids.

DR. MARTIN: This was the first part of their entering into the Academy. They were right out of high school in many cases.

DR. WOLFE: Wow! The only other thing I wanted to say about this slide is that sexual assault, at least in women, is associated with significantly increased reporting of physical health complaints and use of medical resources; often at the rate of two to three times that of a non-assaulted cohort. That's a study by Mary Koss actually using a large HMO in Arizona with several thousand subjects. She found that rape victims utilized medical resources two to three times the normal rate. By year two, 100% of the assault survivors had over-used medical services for no clear organic purpose compared to the non-assaulted cohort.

There are no comparable studies in men. However, there are a number of PTSD studies on men, primarily Vietnam veterans (some on Israeli veterans) showing that health complaints and poor health are reported in higher rates by men with PTSD compared to those without. They report more self-reported complaints and more physician diagnoses. However, physicians do not intrinsically see these people as sicker whereas the men with PTSD feel that they are. I don't know that it's at the same rate that women do. I think some very interesting areas for future research (and you may be doing some of this research here actually) is on the whole interaction between stress and health. That includes stress ranging from severe daily hassles through catastrophic stress.

I think I'm going to just skip this slide, actually. This is the DSM criteria. The main point that I mentioned that got changed is that the witnessing and the experiencing of horror and helplessness were included in the eight criteria. They also moved one of the physiological arousal criteria up from the D symptom criteria to the B so it constitutes a reexperience phenomenon. Then they gave some better breakouts of acute, chronic and delayed onset, which are a helpful for clinical purposes and research. Acute describes symptoms less than three months, chronic includes over three months and delayed onset includes at least six months after the stressor. I believe that this was done in conjunction with putting in acute stress disorder as the diagnostic criterion which occurs within one month of the event. You can't be diagnosed with PTSD unless you had the convergence of the B, C, and D symptoms for a month's time. You have to have had them for a month or more. If you're under a month, you can be classified as having acute stress disorder. You said you were doing some research on ASD. What are you studying in that?

PARTICIPANT: I have done research mostly on coming up with the best criteria, looking right now at policemen as they are going into the Academy before they have undergone field experiences.

DR. WOLFE: Oh, that would be great to gather data before they're exposed to stressful events. I have somebody in my group who did a lot of work with Edna Foa on rape populations. One of the things they found is that (at least in female rape survivors) what you look like at three months is pretty much predictive of your long-term course. If you are positive for PTSD at three months, you have a significantly poorer prognosis for retaining that disorder. It's predictive of at least up to two years and probably longer than that. I think that's an important diagnostic issue because it means when we're seeing samples or patients who at three months are chronic, they are at increased risk for having that disorder on a life-time basis. It also raises the issue for me about early intervention and what we ought to be focusing on in terms of getting in early before a pattern of chronicity has set in, on whatever basis, physiological, psychological, biological.

I have someone on my staff who is studying or is going to try and study rape survivors much earlier on; looking at under that one month window to see if we can learn, just as we do with PTSD, who from the rape goes on to get PTSD. So in this case, who from within one month of the rape will show up with acute stress disorder and what characteristics of the person or the event will predict that. Then based on the ASD group, how does the ASD group fare over time? In other words, I think we don't know a lot about what happens after the one month. What is associated with ASD becoming chronic PTSD? That will probably be very important for therapists, clinicians and researchers alike.

This is an old NVVRS slide, do you all know the National Vietnam Veterans Readjustment Study? Yes, no? Sort of yes. It is basically one of the larger, randomized epidemiological studies of the prevalence of PTSD from the Vietnam generation. The only reason I put this slide in is that it is one of the first military samples that tried to compare men and women, even though women were in largely service support positions in the Vietnam war. As you can see, females' rates of life time and current PTSD are in fact substantially less than rates for men. What was important to me is that the proportions are similar. You will get a rate of women with current PTSD of about 8.5% and then you will get a similar amount, 7.8% who will meet current partial criteria of PTSD. If you look at the life time rates for men and women, there's about a threefold increase, although in men it's about a twofold increase. Women have in some ways a greater risk for acquiring life time PTSD related to the war and getting the diagnosis at some point. Again we don't know why. We don't know if that has to do with earlier life experiences before the military or subsequent experiences after the military that then lead them to become more reactive to their military experiences. Men also get it.

The other thing that was of interest to me in this study is that if you combine the partial and full rates of life-time PTSD you're talking about almost 50% of women. You're saying (these are all theater veterans) that almost half of the women that served in the Vietnam war at some point since the war have partial symptoms of PTSD related to their war-time experience. This is in a setting where ostensibly women were in non-combat positions, largely medical and nursing personnel and presumably in protected areas, which we know is not the case. I think that this study for many reasons is very helpful in highlighting some of these things. Nasty things can happen to people and we might try to protect people but some appreciable subset is going to be exposed. I will show you some data that I have in a second on what some of those exposures were for women.

I want to show you some data I have from the Gulf War on sexual assault in women veterans that gets back to the NVVRS sample. In the NVVRS sample, they were measuring war stress in general. They used a stress inventory that had sort of the whole range of infantry experiences through other experiences. I believe there were one or two questions about sexual assault and that type of trauma. Generally, they were more traditional war-related experiences.

In the course of studying several samples of women from Vietnam in my own research, and hearing them, I realized that they had a series of stressors. Some of these stressors were shared with men during the Vietnam era and some appeared to be moderately distinct for them. I didn't bring those slides today. The data led to putting together a scale which we've since validated called the "Women's War Time Stressor Scale." Unfortunately, it was developed largely for Vietnam and we've since had to go way beyond that. What it showed me was a factor analysis having four distinct experiential factors or components related to female Vietnam veterans reports of traumatic stress during their military deployment.

For the first time on this scale, we asked the women to help us construct the scale. These were not patients, they were a whole variety of women who had served in the Vietnam era. There were women who weren't deployed and civilians who served in the war zone for the USO (United Service Organization) or Catholic Charities; things like that. What was very interesting was that the majority of the women all insisted that we put in several questions on attempted or completed sexual assault and sexual harassment during military service. We put them in along with a whole range of questions that you might see on a more traditional military stress or exposure scale, e.g. going on very dangerous duty or being under enemy fire or seeing a buddy wounded or killed.

When we factor analyzed all the data from the women, we found that they had two factors that were very similar to what had been reported in other studies for men's traumatic stress during war: exposure to a hostile environment and being in danger of losing your life. The second factor was related to the work environment and that involved seeing an unending stream of casualties, feeling helpless, or being asked to perform above your level of capability. Those were similar to the men.

The one factor which was new and distinct was that women had an entire band of experiences that was related to more gender discriminatory experiences and they included, predominantly, attempted sexual assault and sexual harassment. When we did a series of analyses looking at that data, we found that the hostile war zone characteristics differentiated between women in the theater and women who weren't in the theater. Women who weren't in the theater were much more likely to have those experiences. The sexual harassment and sexual assault factor did not distinguish among the three groups. It was positively related in each case with almost the same degree of strength or magnitude to their psychological adjustment and any symptoms of PTSD that were present.

It sort of struck me that it was a broad based phenomenon, as you might expect, although we would like to think it wasn't. When the Gulf War came up, I had a very large study (that's ongoing) involving 3,000 Army veterans which Jim Martin was instrumental in co-investigating. We've been following these veterans consecutively since 1991, when they returned to Fort Devens. We were able to survey them the very first time within five days of their return to this country while they were still on the base, and before they had gone home to their family and friends. Ann Norwood knows about this study also. At that time, we were primarily interested in general war zone experiences and more traditional parameters of psychological stress, PTSD and distress, and depression, as well as things related to family status, vocational status, and substance abuse. Eight percent of the sample are women, so it's under representative of what was in the Gulf. It's also all Army with a mix of active duty, reserve and Guard units. We have over 46 units and the majority are reservists and Guard.

After we finished these surveys, we realized we forgot some important questions about sexual assault and sexual harassment. We also forgot to put in questions about physical health. Some of these things we anticipated but as we've progressed, we're now in phase four of this study, we get a little smarter each day. It is difficult to make a 45 minute survey that has all the questions in the world that you're going to want to ask of these people. You have to avoid being so offensive that they decline to be followed by you or fear appearing on the front page of USA Today.

Anyway, to show you how naive we were, we don't have this data on men, we only have this data on women. In any case, this is a sample of some of the survey items we gave them. We gave them concrete behavioral descriptors of what we meant by sexual harassment and sexual assault. I had talked to Dean Kilpatrick at the Crime Victim Center. He said when they did the huge "Rape in America" study they found out that you can't use the word rape because not everybody understands it to mean the same thing. They became aware of this in particular when they used a rural southern sample. The women just weren't always clear on what the interviewer meant by that term. If the woman was sexually assaulted by someone she knew, an acquaintance, a partner or a spouse, in a majority of those cases she did not endorse the act and it was unwanted or involved the use of threat or force. She also did not use the word rape, because people thought colloquially in our society, it's like date rape. If it's someone you know, it doesn't count. So the rapes were spuriously low. In all subsequent studies they've used, they are employing very extensive behavioral descriptors to get more valid responses.

Here are the points I wanted to make. We ended up classifying the women in my sample into four groups. There were women who had no such experiences (and this is during a three month deployment to the Gulf); women who had verbal harassment experiences; women who had physical harassment including fondling, groping, grabbing, pinching, that kind of thing; and actual assault. What's on the left is some more traditional combat exposure measures.

The only point I want to make here is that there is not a significant difference in levels of combat exposure during the deployment among the four groups. I only want to make this point because this argument came up with a lot of the research on male Vietnam veterans, that they were weak links - the reason they had subsequent bad experiences was because they already had a lot of problems. If you looked at them on other things (this was the myth) they would have complained about a lot of other things. I was concerned that other background factors for women would differentiate them. The stressor we looked at was combat exposure, and in fact the four groups reported roughly equivalent combat exposure. It also matters in terms of their symptom endorsement.

When we look at the four groups again, by these two particular mental health scales, the one on the left, the Mississippi, is a pretty reliable measure of PTSD symptomatology. It doesn't really give the PTSD diagnosis. You would have to use a SCID or a structured interview for that. It gives you PTSD severity. The "Brief Symptom Inventory" is a smaller version of the Symptom Checklist 90. It's a measure of general psychopathology across (I can't remember if it's eight or nine) subscales such as depression, hostility, paranoia, somatization. That's a general rating scale of general distress. This time, the differences, as you would expect, were different and pretty much in a linear fashion. The women that experienced the more severe sexual events had the higher symptom scores for both PTSD and Mississippi.

I don't think I have the slide in here, but we've since gone back and looked at further differences in those. It turns out that if you do regression models where you use the event to predict the outcome and the type of assault to predict the mental health outcome on the left, the physical harassment event is more likely to result in general psychological distress. You get bigger increases, relatively speaking, on the BSI scores than you do on the Mississippi. For the sexual assault, you're more likely to get increases in PTSD scores so you get more of a classic trauma response, at least in my sample.

DR. CARDEÑA: Did you use Keane's criterion for the Mississippi to determine PTSD?

DR. WOLFE: No, the 107? No. We don't know what the cutoff is for the Mississippi score for cases for PTSD because the only sample on which it's been validated is the Vietnam veteran sample out of the NVVRS and a couple of other studies where they came up. In Keane's original study, his Mississippi cut score was 107. If you were above it, you were likely to have PTSD. If you were below it, you were pretty much likely not to; with pretty good sensitivity and specificity. The trouble is that the test was done on male combat veterans who were treatment seeking at VA medical centers. When they went back and they did those analyses using the Mississippi and the SCID interviews in the NVVRS study, which is a community sample, the cut score they got on the Mississippi was either an 89 or 90. It really depends on the population you're studying because the base rates of the disorder are going to fluctuate by population. You have to be able to investigate it in your own particular sample.

In phase three of the Gulf sample we have 110 out of 200 people randomly selected, certified but selected on some other variable that we're looking at, which is physical health in this case, high and low. They're coming in and they're getting all these measures again. In addition they're getting a structured clinical interview for DSM-IV, the SCID, and the CAPS which is a validated structured interview for the clinician administered PTSD interview, as well as other measures of distress, depression, and anxiety. Based on their SCID diagnoses for positive and negative PTSD, we will then be able to project. We will look at their Mississippi scores and at least for that subset we will be able to hopefully obtain a cut score on the Mississippi for the broader sample. This is important because in time one and time two of our sample, we don't have face to face interviews.

DR. FULLERTON: What about recency of event?

DR. WOLFE: In terms of?

DR. FULLERTON: I assumed that you looked at that, in terms of outcome, how recent?

DR. WOLFE: Yes, that's a really good point. I didn't bring the data, but when we did this they had been back about a year and a half. What we've done in all of our surveys is use a trauma stressor checklist or a life stressor checklist on the other 12 most common life events, and the person's rating of their current impact. In fact, what we are finding in our sample is pretty much what has been found in other samples, at least with catastrophic things like rape. We found that prior victimization, to some degree, predicts PTSD is happening again. A subportion, and it's a very small portion of our sample, had other traumatic events happen to them in whatever time has elapsed since we last saw them. We then have to put that into all the equations.

You're right. We were doing retrospective analysis originally, now we're doing prospective analyses. The point is these people are living lives. They've gone home and some people have had their house burned down and a number of the people are divorced. Many of them had financial loss or financial ruin. The one thing I've really learned from this once and for all is you can't sit in your office and make concepts and models in your head. People are living in the outside world and we have to attempt to make the research a little bit more ecologically valid. That's an excellent point.

These are the rates in the sample of women in terms of sexual assault and harassment in the Gulf. The majority of women said no such thing ever happened to them. About a third reported clear cut incidences of verbal harassment, according to a series of very explicitly defined questions. As you saw on the symptom things, it wasn't terribly associated with symptomatology. It's not a good thing, but they weren't crazy from it.

There is a response bias because we don't have 100% of women replying. I think it's about 80%, so it's pretty good but it's not 100%, and we don't know about the women who didn't reply. I guess part of me believes it's probably more likely that they had something happen than not if they didn't reply, but we don't know that. However, a distinct 8% (at least by their own report) said that they had an assault. I can't figure this out because it has to do with year prevalence rates, so it's not straight multiplication. These rates evidently are quite a bit higher than rates of civilian events for these categories, based on the fact that this is within a three month window. If you extrapolate it to year prevalences, these turn out to be substantially higher. We're about ready to publish this data. We haven't published it yet. It's way, way overdue.

DR. MARLOWE: Jessica, what was the definition of assault?

DR. WOLFE: We have a very clear behavioral definition of assault , it's anal, oral or vaginal penetration against your will by some portion of the other person's body. It's behavioral. We didn't use the word rape. That's a good point. The only thing I'm sorry about is that I didn't get the data on the men. I do know of a few events that happened.

DR. MARLOWE: One of the things, Jessica, that's probably worth keeping in the background is that this is not a sample representative of U.S. military or even U.S. Army.

DR. WOLFE: Or anything. It's a sample of our sample.

DR. MARLOWE: Unique in that the majority of these are Reserve and National Guard type units that have a very different contextual existence.

DR. WOLFE: Oh, you just reminded me of a really important point to make. We left room for comments. I don't know if I've ever told you this. See, you always learn something new -- we have a scale in there on unit cohesion. It has, I can't remember the two dimensions, but it's like horizontal and vertical, which is with your leaders versus with your comrades. We haven't analyzed this data yet, so we've got to do this quantitatively. Qualitatively we left a space for people to write comments on the bottom. About 90% of the women wrote comments. What do you think they wrote? The ones who have no event wrote, "nice questionnaire, but we don't know what you're talking about. Things like "this never would have happened in my unit. My leader would never have permitted this. I'm extremely close with the people in my unit, we all look after one another." These women don't know each other, it's 46 different units. One group wrote that.

The other group that had the event happen, writes the other type of thing. "No one listened to me, I was threatened with ostracism by my unit, I was made a social pariah. I was threatened with demotion. I was demoted. I was harassed further. I was given horrible duty. My CO (Commanding Officer) verbally harassed me," really bad things generally related to leadership. It was fascinating because it makes sense. The more I think about it the more obvious it seems; the leaders set the tone and the context. I don't think we've ever really studied it, or we haven't anyway. It was so fascinating to see them write it down concretely that the chain of command broke down and it was either covertly or overtly tolerated and the effects were quite detrimental. Those women were much more "psychiatrically distressed." They looked sicker. When we write this up, it will have all the demographics of the sample very explicitly. Active duty are by far our smallest piece. In fact, these aren't broken out by the branch, actually we probably should. I don't think they were largely active duty.

DR. MARLOWE: I suspect that the context of the prior relationships of these people with one another, before they went to the Gulf, would be quite different depending on the nature of one's service. I also think what they experienced there is probably different based on that.

DR. WOLFE: Yes, I'm sure. It really gave me pause to think about the future as we're going to use more and more reserve forces and the all volunteer army. I hope I'm not alarming anyone by bringing this up, but these are just things I've been thinking of because they have interesting implications, not only for us as clinicians and researchers but for training, education, and policy.

DR. MARLOWE: The problem is we're dealing with people who until this deployment had almost nothing to do with each other. A weekend a month and 20 days during the summer.

DR. MARTIN: Who are then thrown together 24 hours a day, seven days a week.

DR. WOLFE: They're also stressed for a number of reasons. Yes, it's very interesting. I want to just show you some health data. I don't think Dave or Jim have seen this yet. By time two in this Fort Devens Study, people told us in the field that they were not feeling well physically; a subset, a minority, but a subset. We would go back on site to readminister the survey, and as I said, it was originally looking at more general adjustment. A subset said that they felt they were sick. This was pretty much in advance of Persian Gulf Syndrome even being talked about. I said, "well, I always want to listen to my subjects," that's where we got the sexual harassment data. I said, "we had better put a checklist in here."

We're not physicians and we can't do medical exams in the field. The study was not set up for that. It was a survey study but at least we could collect some self-report data and then we will deal with this later. We put in a health symptom checklist that has been used by Paul Bartone and others, and Kathy, actually at WRAIR (Walter Reed Army Institute of Research), I believe. The checklist did confound, with some of the items being more psychosomatically linked than purely physical health complaints. It was not something like the Cornell Medical Index. It was not as straightforward. Nonetheless we got data on something and then we got that at time two. We have that data on over 2,300 people. I will show you some data I have here from that, and then I will talk to you about time three at the end.

This is generally what the sample looks like. It's young, about 30 years old. They have some college education. Only 8% are female, that's low. It's overly representative of whites, which is also an anomaly. There's the breakout, Jim, it's predominantly Guard. As Dave said, that affects the composition and many things. These analyses aren't done by those breakouts, but they could be.

Those are just some of the various measures that we used, and you can see how over time we're learning that we had better be asking about other things. We put more and more things in. We started moving away from traditional examinations of PTSD and trauma and much more into general psychosocial adjustment, adaptation, family status, unit cohesion, health status, and vocational status. We included the more functional measures, I would say, and less of a focus on PTSD per se. In fact the rates of classic PTSD were very low and it also just seemed less germane to what people were saying. Social support --

DR. ELL: What are you using for social support?

DR. WOLFE: I don't have my list of measures. One family measure, is called FACES (by Olson?). That one is used and another one, which I can't remember. The social support measure is one by Sarason, as well as also another measure that was used in the NVVRS. I forget the name of it, but it is a validated measure. Another measure is the Coping Response Inventory by Moos, and that's been used on huge numbers of non-military populations. We have yet to analyze all of this data.

Here's the first of the male and female breakouts. This is at time two, which is about two years after their return from the Gulf. There's not a lot of male/female differences. The women are a little younger. The combat exposure was comparable by their own self-report. The women do have higher Mississippi scores or PTSD like symptoms by self-report, but that's just a mean. That doesn't show the percentage of people who would be above a presumed cutoff and in a clinically significant range for PTSD. The women come up higher on the global severity index from the BSI which is more general distress, and they come up higher on a health symptom reporting checklist, although not significantly.

Between our samples, this is actually a longitudinal slide, there was a slight increment in subjects' responses to trauma symptomatology from time one to two years. The trend is consistent for men and women; the increment is slight. I will have to come back next year and tell you about time three and four. I think those are going to be more informative because I think we don't know what time one means. I think we have a suppression effect if anything, because when we saw most of the people at five days at the base, they were ecstatic to be home and people were pretty euphoric. I'm not sure how valid a lot of that stuff is. I don't know that I would want to say that symptoms increased from our two points. I think it would be more informative to start looking at four time points and looking at the line, or the gradient overall. In any case, it's similar for men and women.

DR. URSANO: If you remove the women who report sexual assault, are there still differences between men and women?

DR. WOLFE: We have to do that. That's a good point Bob, we haven't done that yet. They may actually equalize.

DR. URSANO: It would strengthen your other data, the importance of that as a stressor during times of combat.

DR. WOLFE: Right, and as a distinct gender link to that that wouldn't necessarily be a real PTSD difference. Yes, I will have to do that. You're absolutely right. It's so highly associated with trauma symptoms.

This is just some change status data and it's broken out by men and women again. I can never read these. We have time three almost completed. We have a longitudinal statistician who is going to tell us how to treat data where you have attrition and do survival analyses on it. What I'm interested in is change status over time, and in what directions it goes and then what's associated with going in different directions, including gender, as well as other things that are associated. What we have found is that the vast majority of people were below throughout, if you pick a particular measure here, which is presumptive of PTSD or PTSD symptoms or caseness.

We used caseness here as defined from the NVVRS and we used a cutting point of 90 on the Mississippi because they're both community samples, they're not treatment-seeking. The key in cutoff, remember, is from a treatment seeking sample. I think it's spuriously high for ours. We will have to go back and recalibrate this once we get SCIDs on everybody and know what the real cut is for this sample.

DR. CARDEÑA: Are you giving measures to yourself?

DR. WOLFE: We should be, because I'm getting crazier as it goes along, especially because we keep seeming to step in the middle of whatever is the current politically controversial issue. My research is normally very idiosyncratic. It's not survey research, it has nothing to do with political issues. First we stepped into the sexual assault issue the week after Tailhook broke, and I had to testify before Congress. Now we stepped into the middle of the Persian Gulf issue, just because we collected health data. People say, "well, you have all these people over time."

Very few people went from being above to below. In other words, a couple of people improved. Most of the people who were above sort of stayed above, and then a few people who were below went to above. A proportion of people became worse, but again it's a minority. We're going to go back, as you said Bob, and not only look at what happened to them in the Gulf, but what happened to them in the intervening time since then between time one and time two and then eventually between time two and time three. As I said, we do have rates of other untoward things happening, such as people's houses burning down and things like that. We will try and look at whether it's comparable to civilian estimates on those type of bad things happening and then to what degree those events contribute to the outcome.

This slide is not a definitive list of what Persian Gulf veterans who are ill think they have. This is a reflection of what was on the checklist we gave them and then their responses to that, broken out by men and women. There are some interesting things. The women rank order their symptoms differently, and women endorse certain symptoms more than men. Particularly striking are the differences in headaches, general muscle aches and pains. Those are all significant differences at the .01 level. Then you start getting into unknown factors such as the etiology of nervousness and tension, insomnia, depression, crime, and things like that. Viral illnesses; it's interesting to me that cold and flu aren't different between men and women. The big thing that my statistician was saying to me is what are we going to compare them to? What is the base rate in the U.S. population? What's the base rate in veterans for the flu?

DR. MARLOWE: If you go back to work we did in the seventies, you find women routinely report a higher level of physical symptoms.

DR. WOLFE: Right, actually we were talking about that before you came in.

DR. MARLOWE: The interesting thing when we did our research with soldiers in the late seventies, is that while they report almost double the number of symptoms, they don't lose any more time. It has always been much more culturally appropriate for women to say what their symptoms are than men.

DR. WOLFE: Exactly, our most recent grant has more functional status measures in it. What's impressed me more and more as I treat patients is the end question is still, "so what?" We have some people with very few symptoms in some of our VA cases who are totally a wreck or others with moderate amounts of symptoms and they are a wreck and they can't do anything; and they've never worked and they've had 35 supervisors and four wives and they're chronic substance abusers. We have some people who have pretty high levels of psychiatric symptoms, whether it's PTSD or depression or whatever or both who are quite functional. In the end, we want to blend these kinds of approaches where we're starting to look at more functional status and functional abilities, not simply symptom measurement because we don't know what that means. Particularly when you get into the issue of gender where you have 20 years of research showing that women frequently tend to endorse higher symptom rates and we don't know what that means. Maybe they like to label symptoms more, or maybe they're better identifiers of internal or receptive cues, or maybe it's more socially acceptable.

DR. MARLOWE: Well, the argument for years going back to wounded persons and many others was that it's more culturally appropriate and accepted for women to produce and talk about symptoms than for men.

DR. WOLFE: Exactly.

DR. MARTIN: We saw the same thing when we were looking at family members in Germany during the Gulf War. We compared women whose husbands were deployed and women whose husbands who were not deployed, using the CESD (Center for Epidemiologic Studies Depression Scale). There were significant differences in terms of symptomatology. When you asked, "how are you functioning, despite all of this stress you are experiencing?" Looking at the roles as parent, the role of an employee for those women who were working, and getting along in the community, there were no differences. Despite a lot of endorsement of symptomatology, self assessment of functioning was that they were doing okay.

DR. MARLOWE: Jessica, an article published in '79 or '80 by George Bishop (who worked in our department) on months of health diaries for a couple hundred women and a couple hundred men at Fort Meade in Maryland showed the over reporting of symptoms, the differential reporting of symptoms, but not much difference in terms of work status, function and dysfunction.

DR. WOLFE: That's why I'm always reluctant to talk about these data. Until you can show the functional measures, you're really talking in a partial vacuum. We have no idea what it means. It could be construed that it makes them more interpersonally skilled, it could be anything, right? That's why with the data I'm showing you, you have to take it with a grain of salt or in context.

This slide shows more symptoms that continue on downward. The women here, by the way, do look more depressed if you look at things like loss of interest and things. If you look at what you think would be -- well, you don't know if -- they're physiologically related but who knows what the etiology is such as sweating and shortness of breath, things like that. The women are slightly higher, but it's not significantly different.

I love this item, "crying easily."

DR. ROSENBERG: That's the most culturally stereotyped thing.

DR. WOLFE: Yes, it's just ridiculous. You think that's what that is. Men don't cry, or they don't think they cry.

DR. ROSENBERG: The difference in reporting symptoms, which goes back for years and is, I guess, still seen, really may be very basic. I don't think it applies to illness so much. It may really be a different view of life and what one expects.

DR. WOLFE: That's interesting.

DR. ROSENBERG: Yes, I don't know what it is, but I think it's extremely significant, but not necessarily for your study. It may be that women expect to suffer.

DR. URSANO: The last one there, Jessica, is on reporting that they are presently on medication for anxiety?

DR. WOLFE: Yes, I believe so, Bob, I will have to go back and look at the wording of it.

DR. MARLOWE: Again, there's always been historically a tremendous proportional difference between the number of women who are receiving medication---

DR. WOLFE: Right.

DR. MARLOWE: -- as opposed to men, and this is physician-driven.

DR. WOLFE: Right, that was the other thing. I went and looked up some of the literature.

DR. MARLOWE: That's the real problem because physicians in all the studies done --

DR. WOLFE: Provider bias is very strong.

DR. MARLOWE: You don't give drugs to the breadwinner, you give them to the spouse. That has been a consistent theme in American medicine.

DR. WOLFE: The men can drink instead. Again, this is all descriptive. Who knows what's going to come of all this. This is the percentage of people who believe, either physically or psychologically, that their health changed since the Gulf War. You're getting pretty similar things. This is at the level of moderately bad or very bad. Sort of bad and terrible is how we cut it for this. It's interesting because there is a distinct percentage of the sample, in some cases up to a quarter to a half, that's saying that they had an adverse change in their health for the worse. Then if you would rate their current health as fair or worse, at the level of fair, poor or horrible, it's much less. It's still an appreciable number.

DR. MARLOWE: Have you looked at it in terms of age?

DR. WOLFE: No, we never looked at it in terms of age.

DR. MARLOWE: All the national ambulatory health surveys came out with one very interesting result. Well-being goes up with age. Well-being peaks when you reach the fifties.

DR. WOLFE: Well, that's interesting because this is a very young sample. The mean age is 30.

DR. MARLOWE: You've got to be very careful. The younger the people are, normally the lower their self-reported well-being will be. It's counter intuitive, but it goes back to all the work DePuy did with the ambulatory health survey.

DR. WOLFE: You may get more tolerant and adapt to whatever is going on.

DR. MARTIN: There's some recent work by, I believe, Ross in Indiana or one of those states, of large samples of women. I'm not sure whether she's using the BSI or one of those measures and looking at that phenomenon across age groups. It was reported in the Journal of Health and Human Behavior within the last few years.

DR. WOLFE: I will have to look it up. Ross?

DR. MARTIN: Ross, R - O - S - S. I have a copy of it, I will send it to you.

DR. WOLFE: Okay, if I can't find it. Yes, interesting.

DR. MARLOWE: There are two national surveys using general well-being.

DR. WOLFE: I was going to say, there's probably national data on a lot of this.

DR. MARLOWE: It just always looks the same.

DR. WOLFE: You know, of course the $65,000 question is in these samples, I don't know if I have it here, yes, this is the $65,000 question. It doesn't have to be PTSD, per se, but whatever it is, people will say to me, "oh, it's the people with PTSD. There's really no health problem. There are somatic equivalents and what you have is distressed people." I think we know that that's probably not the exclusive answer. In any case, when you look at this preliminarily, about half of our people who don't have symptoms of PTSD (in our sample, about 43% are reporting pronounced health symptoms) so PTSD may turn out to be a sufficient but not necessary cause for reporting of adverse health. I think this helps strengthen the argument that this is not exclusively a stress syndrome or a stress equivalent that we're seeing. We don't know what it is and there may be multiple etiologies in the illnesses. I would say from my personal or professional opinion it does not suffice to write it off as a psychiatric equivalent. I don't know if that sits well with people here or not. I always feel compelled to say it, since the first time I testified with a general officer who told me it was all stress disorders and in their heads. Then the next week he didn't say it, he said, "the VA said it." I said, "the VA never said that. I would be out of business, they would take all my funding away."

DR. MARLOWE: In the study we did in Hawaii, we really had three pools. The largest are those reporting high levels of psychological symptomatology, pretty high levels of symptoms relevant to PTSD along with high levels of physical symptoms.

DR. WOLFE: That's to be expected.

DR. MARLOWE: That's to be expected. The smaller group reports physical symptoms alone, and another group reports a high level of general psychological and physical symptoms. The one thing that we can say about it is that people who deploy report twice as many symptoms on average as people who do not.

DR. WOLFE: Oh, do you have data on that, Dave?

DR. MARLOWE: Yes, and controls from the same units. The active force reports a lower level of symptoms, but twice as many, these were Marines primarily.

DR. WOLFE: As non-deployed?

DR. MARLOWE: As non-deployers. The question you've got to ask, is the level of sensitization and contamination (by what has been now for almost four years a national focus on what's happened to your body because you went to the Gulf)? We don't know how much that's played into it.

DR. WOLFE: Let me understand this. Even within units, the deployed have substantially higher symptoms than the non-deployed? And within the types of service, the active, in general, have less.

DR. MARLOWE: The active, in general, have less but those who deploy still have twice as many on average as those who do not.

DR. WOLFE: Wow, so we will have to look at that. The one thing we're missing is good control groups. The problem with our using the non-deployed from the units we have is it's not clear why they weren't deployed; if they had some medical problem and that was the reason they were held back, so we thought we had to get other controls.

DR. MARLOWE: What we have here are people who simply never deployed because they came from units after --

DR. WOLFE: Oh, you did that, okay.

DR. MARLOWE: And predictably with the active, which is Marine units, there are a lot of new people who had no history.

DR. WOLFE: Yes, I think no matter which way you cut it, there's going to be something.

The last thing - here - in our sample significantly more men than women reported health problems in the absence of PTSD. The PTSD health association was a little stronger in women than in men, but in either case, it's not a one-to-one correspondence.

DR. CARDEÑA: Following the general drift of different levels of stress for men and women, did you mention whether there was a connection of PTSD and impulse control problems?

DR. WOLFE: No. We have substance abuse measures, but we don't have measures of impulse control or disinhibition. Is that what you mean?

DR. CARDEÑA: Yes. Well, people made comments before about differential levels of stress. Women, at least in our culture as opposed to some, would be more aware of those events and if you follow the stereotype, men may get more into externalizing events.

DR. WOLFE: Oh, I see what you're saying. No, but we do have that data from other samples. We have that on psychological evaluations of men and women, clinical patients not these coming in for assessment with us. The men do have a much higher preponderance of legal infractions, trouble with the law, being thrown in jail, breaking up bars. The women have higher rates of depression, somewhat more somatic complaints; they cry easily, that type of thing.

DR. CARDEÑA: And we get into a PTSD diagnosis.

DR. WOLFE: Yes, although I haven't studied it. The question is, would it be also in relationship to not having a PTSD diagnosis?

DR. MARLOWE: Has anyone ever looked (this is just a little off) at the comparative demography of those veterans who use the VA as opposed to those who don't?

DR. WOLFE: Yes, they're quite different. Actually that's why this is good because this is not a VA sample. This is not a treatment seeking sample. It's one of the few surveys that isn't.

DR. MARLOWE: It always worries me about VA clinical samples when I go in and I feel I'm back in --

DR. WOLFE: Well that's a big problem even with the Registry data, although they're not VA patients necessarily. They have to be people who are willing to come in and put their name on the Persian Gulf Registry in a VA Hospital. Yes, it's a problem. There are a couple of really good studies. Basically it's associated with disability status, low income, and a lack of access to other health insurance. It's a little bit different for men and for women and we have a study actually starting up on that now, but that's generally what is characterized. That's why, typically, we try not to draw our studies out of clinical samples unless we're studying a clinical phenomena in which case we sometimes have to. It is a problem. It's going to be an interesting issue for research for us in the future as the VA tries to position itself to be more competitive in the marketplace and wants to be seen as a provider of managed care, not as a system of last resort of the highly disabled. We will see what happens.

That's just a summary slide. I think I'm going to stop there, if that's okay because it just goes on to some other data which is even more diverse than that. Maybe we can talk for a little bit.

DR. MARLOWE: Of the women in your survey, given the increase in symptomatology and so forth, how many left the service?

DR. WOLFE: A lot. I don't have the percentage. It's a minority, but it's an appreciable minority.

DR. MARLOWE: The unpredictability in terms of time one --

DR. WOLFE: Oh, if you could predict that you mean?

DR. MARLOWE: In terms of whether or not --

DR. WOLFE: I don't know -- there's probably about 20 papers you can write up. You had better come up to Boston because we're going to be writing these forever. There's a lot of questions you could answer, again limited to the generalizability of the sample, or lack of generalizability to the sample, but it's still 3,000 people. It's something. It gets confounded by the physical things because they may have gone out on physical disability. When we go into the field to see this sample, most of them look okay. Some of them complain about physical symptoms but don't - to the naive eye - appear sick. Then we have now seen a subset of them who look ill. They don't look well. They will have odd symptoms like skin rash. We've seen actually a few people with odd skin coloration changes, like an odd bronzing on their face. It's odd. So again, it's hard to do anything with subjective impressions and the complicating thing is most of these people come out normal on routine lab tests and routine exams. We're obviously going to have to look for more refined measures of whatever is going on and then track it over time. Do you have any thoughts on that?

DR. MARLOWE: Well one of the problems is there are so many things that don't necessarily have a relationship to the Persian Gulf. Of the first 1,500 that come into the military, 83% have either psychological disabilities or are very easily diagnosed. Another about 13.5% require sophisticated diagnosis and have more problems. Then you get down to the 2.5% that you get down to in almost anything where these people are sick but we haven't the vaguest idea where they're sick. The problem with Gulf War disease from my point of view, is that whatever it is violates all the laws of epidemiology because of the way it's distributed and because of the way in which it attacks. In terms of exposure, most of the agents that were theorized for exposure don't produce the kinds of symptoms that have been produced. It's a real problem.

DR. WOLFE: We have our work cut out for us. Also if it turns out to be viral or an immunological thing, I mean there are some things where gender would be a factor in the expression of that as well. If women have higher rates of autoimmune diseases.

DR. MARLOWE: If it's a new autoimmune disease, we should know that it's a new autoimmune disease by a lot of other phenomena. That's not what's showing up.

DR. WOLFE: I think of anything that's showing, it is the heterogeneity.

DR. MARLOWE: Well, heterogeneity normally means that you don't have -- the military refuses to call it a syndrome.

DR. WOLFE: I'm not putting my bet down yet.

DR. MARLOWE: Well, as far as anyone can tell, it's a congeries of many and varied things. Thus far, has anything panned out, Ann?

LTC NORWOOD: I really haven't stayed abreast.

DR. MARLOWE: I'm talking to the Institute of Medicine.

DR. MARTIN: They're still buying chickens.

DR. MARLOWE: Well, if we were chickens.

DR. WOLFE: What did you say, Jim?

DR. MARTIN: I said Ross Perot is still buying chickens.

DR. WOLFE: Yes, on the other hand, their study gets published. Wouldn't you know it, right? Well if you give enough chickens really bad things, probably bad things come out right?

DR. MARLOWE: For far longer periods of time than soldiers.

DR. URSANO: Jessica, have you looked at single parents in both your men and women?

DR. WOLFE: We actually haven't, but we have that data in there. That would be interesting to see. We've done very little with the family data, the background data, and social support. We know that's actually a great interest of many people. We haven't gotten to it yet for lack of time. I think the whole issue of what buffers stress and what helps response is very compelling. Somebody was showing me one of the cancer studies that's out now on breast cancer survivors with group therapy and the supportive function it plays and that those people do better. I mean do better physically as well as psychologically. You think, "oh, that's ridiculous," but they do. There are many things to ask.

DR. MARLOWE: What we're saying is that the buffering effect is a here and now effect. That if the unit was cohesive in the Gulf it buffered people in the Gulf, but it doesn't buffer them after the Gulf. What buffers them after the Gulf is the cohesive unit that they're in after the Gulf. We don't seem to have a terribly great historical carryover from previous systems of supports, which may be one of the reasons why some do well, if you're consistently in the here and now.

DR. WOLFE: I think that's another reason for what you said about also looking at current level of cohesion or community because if an appreciable minority have left the service, that's a major life style change in and of itself that we probably shouldn't be ignoring. I'm just thinking of some of the work by Bob Stretch from -- I don't remember when it was from, Bob, do you? The eighties with the Army nurses?

DR. MARLOWE: The early eighties.

DR. WOLFE: But people looked much more symptomatic when they leave active duty.

DR. MARLOWE: Well, you went from a highly supportive environment when you were there at the time. I watched people get off planes from Vietnam and be physically assaulted and have people spit at them or people scream baby killer. In seventeen hours you left, you were home alone, the only one often in your community who had the experience. I have been listening to Brits talk about the equivalent experience out at the Falklands, where the only people they could talk to were fellow soldiers. No one else had the vaguest idea of how to talk to them. One soldier, the question his family kept asking upon his return was, "how many people did you kill?" which is not a question a soldier wants to hear.

DR. WOLFE: I would think not. Questions, comments?

DR. URSANO: I like your strategy, Jessica, that you presented in the beginning which is one that I think we also looked at. The interesting questions are really not in differential prevalence rates. The interesting questions are in the different mechanisms and/or buffers, moderators involved by gender and/or in the differential exposure to stressors that occurs by gender; that both of those can lead either to prevention strategies or to intervention strategies.

DR. WOLFE: Exactly. What I was thinking, Bob, is when we looked just at the prevalence, what we're getting into is outcome and we're looking at diagnostic classification which may or may not be accurate or arbitrary. Then what do we have? We've got numbers. It doesn't tell us anything about the concept or the process. So that's what has led me backwards to thinking about some of these issues. As you said, it has huge implications for intervention and for prevention as well. There's very little work done in this area. I mean there's only a couple of papers out on female gender and this risk factor issue. It's funny because everyone just accepted it as though it were a fact. Nobody says, "but why, what does that mean?"

MAJ SUTTON: Well, thank you so much for joining us today.

DR. WOLFE: Thank you.

Gender Issues and Training

Edgar M. Johnson, Ph.D.

Today we are fortunate to have with us, Dr. Johnson and his colleagues, Dr. Arnold Steinberg, Dr. Beth Harris and Dr. Jackie Motteren of the U.S. Army Research Institute. Dr. Johnson is the Director of the U.S. Army Research Institute (ARI). His areas of interest include human performance and systems and human decision making. He has brought his team of experts today to help us learn more about gender issues and training so without further ado, Dr. Johnson.

DR. JOHNSON: I thought it would be useful to provide a background in terms of ARI's research in the area of gender issues dating from the early 1970s to give you a perspective on how the Army has dealt with these issues.

In 1972, the issue of the integration of women into combat support units was first considered. There was a lot of discussion that women would destroy cohesion and morale. From a perspective of 20 years, it is hard to imagine the emotion that surrounded these issues but they were very emotional at the time. We got involved as a direct tasking from the Chief of Staff at the time and the first study conducted was called Max WAC's (Women's Army Corps). It examined the issue of the percentage of women which could be added to previously all-male companies without destroying performance. There was concern among the leadership that as little as 5% would destroy performance. We created an experiment using 10 companies and varied the percentage from zero to 35% with a performance measure. To show the degree of scrutiny, we had what was called a test integration working group which was a group chaired by the Deputy Undersecretary of the Army and a group of general officers to review test plans. This was treated with all the seriousness of a test plan for a major weapons system undergoing operational testing.

The results of the study showed that there were no differences in performance between our control companies and the companies with percentages of women as high as 35%. That study was published in 1976. The following year we were directed to do another study as our first study was clearly not conclusive evidence. The second study was called Ref WAC and it involved the exercise REFORGER (Return of Forces to Germany). We used a number of battalions which were given varying percentages of women in combat support units, military police, maintenance, medical and others. A field exercise was conducted at Fort Carson over 10 days and again measured the performance of units with varying percentages of women. This test consisted of 50 people, and was set up as a special project within the institute lasting for nine months. We spent about $3 million conducting this test. Test results yielded little difference in the performance of units depending on the percentage of women. Consequently, the following year we were directed to do another study called TACWAC. At that point, the Army Secretariat and the Defense Secretariat decided that the Army was stalling on the issue of the assignment of women to units. TACWAC was canceled and the Army was directed to design and implement a policy allowing women to be integrated in combat support units.

That time, in 1966, was also a period in which West Point admitted women students for the first time. We also started a study called Project Athena. There was a lot of concern that women, as members of the Corps, would destroy the Academy. Project Athena was never really completed. It lasted about four years. We collected exhaustive amounts of data on the performance of female cadets. The study was never canceled but it was never finished. It was just not funded. The data collection at the Academy continued for a couple of years and then just sort of stopped. The findings were not terribly remarkable. Female cadets, in fact, had less upper body strength, less anaerobic capacity but in most other attributes were indistinguishable from male cadets.

After that period, which was the late 1970's, the gender integration issue lay dormant. The period of the 1970's was a period of a lot of ferment because up until 1967, the female content of the military was limited to 2% by law. That was changed in 1967.

1970 marked the first female general officer in the military. There were two promoted to Brigadier in the Army. One was Director of the Nurse Corps, the other was first Director of the Women's Army Corps. It was not until 1972 that women were allowed to join ROTC (Reserve Officers Training Corps), and that again required a legal change. In 1976, you had women in the Academy. In 1977, partly as a result of the experiments we had done, we put a large effort into combat probability coding. This was because, unlike the Navy and the Air Force where prohibitions against women in combat were legislatively based, in the Army, the employment of women was at the discretion of the Secretary. There is no legal basis for excluding women for any branch or job within the Army other than the Secretary's pronouncements.

There was a little bit of interest in physical capacity and the Army at one point attempted to develop strength tests as part of selection procedures. Normative data was collected, and a test was developed but then it fell into disuse. At the same time, the percentage of women in the military increased to about 11%. There are few occupations which are totally closed to women.

What happened along the way is that the gender integration issue was originally driven by military requirements. Up until 1940, women were never allowed to be in the military. They could be employed by the military and, in fact, nurses in World War I were not in the military. They were employed by the military and so had no military rank or status. The issue was largely driven by requirements, the military needed more manpower. The 1970's, as you recall, was a time when the military as a whole transitioned to an all-volunteer service and there was great concern over whether the Army could attract enough manpower to meet its needs. At the same time there were a lot of cultural factors. The Army is, in fact, America's Army and reflects the society in which it is embedded. As the employment of women outside the home went from 10% to where currently it is just under 70%, there was a lot of outside stimulation for the Army to employ more women and to open up more jobs to women.

There were the cultural changes and we had very active interest groups. There were both legislative and judicial changes and there were some internal changes but internal changes were largely driven by needs and requirements for manpower. There are clearly differences which are important for the military, many of them that were of concern probably do not reflect genuine differences. Unit cohesion and morale were, in fact, not destroyed. It is not clear whether there are gender differences, cultural differences or organizational differences at this point.

In looking through the file to refresh for this discussion, I noticed a study, a meta analysis of leadership, in which they were looking for gender differences and leadership styles. If you collapse leadership style studies across three different settings, one is organizational, in natural settings as it were, assessment centers, or experimental settings, what you find is that the differences are largest in experimental settings and virtually disappear in organizational settings. The hypothesis for the disappearance of different gender differences was that in organizational settings, the cultural and role norms are so strong that they overwhelm whatever other differences there may be.

After the flurry of work in the 1970's, our work was dormant other than some attitudinal work. There was concern over recruiting women. In the early 1980's we did a number of studies looking at incentives for enlistment and re-enlistment for women and found that the incentives were very similar to those for men with the exception that women tended to rate job skills much higher than men did.

Since then, we have done two sorts of studies and that is why I brought my colleagues. One study looks at the area of leadership, particularly in institutional training. Drs. Steinberg and Harris have been involved in a series of studies over the last few years which have looked at attitudes across the Army and a number of the Army's imperatives, and as part of that have looked specifically at the issues of women in leadership. For example, one of the studies examined why captain promotables who were female took incentives to leave the service. The question explored was if you are on the promotion list and offered an incentive to leave, why would someone who is going to be promoted take the incentive to leave, versus a male who is not going to be promoted, or males who were being promoted.

Dr. Motteren has been involved in a more recent set of studies, looking at gender-integrated basic training. The Army had gender-integrated basic training in the early 1970's and for a variety of reasons went to single gender training. Again, a couple of years ago there was some interest in going back to that. We have been involved in exploring that and Dr. Motteren has been one of our principal researchers in this area. I will turn the discussion to my colleagues.

The only handout I brought was one I suspect most of you have seen which was an editorial in Government Executive called "Piglets and Giraffes." I don't know whether everybody has seen it or not.

DR. TEITELBAUM: The whole world has seen that.

DR. JOHNSON: I know they have heard about it, I am not sure everybody has seen the actual editorial. The reason I brought it is that I think it really captures many of the attitudes that underlie a lot of issues concerning the integration of women in the military. While the analogy that was drawn may be quite humorous, the attitude it reflects is widespread and pervasive in terms of gender differences.

DR. MARLOWE: If you could, Ed, first talk a little, as I think there is a very important point that you are making. I think there is the illusion out there on the part of many people that there is some kind of voluntaristic EEO (Equal Employment Opportunity) movement on the part of the Army that makes better jobs for women, and that is not the reality. I wish you would talk a little about that. The way in which the personnel needs drive the subterranean army.

DR. JOHNSON: I think what sometimes gets overlooked in a lot of issues, and what is true for all of the military services is that manpower requirements drive the personnel system. If the field needs 100,000 warm bodies, the personnel system will find 100,000 warm bodies. If they say they should be college or high school graduates from upper middle categories, that is desirable but they will still find 100,000 bodies. You can see this very clearly in the early days of the all-volunteer force in which quality goals were set and missed routinely each year. The imperative for the number of bodies in most cases, overrides all other attributes of the manpower requirements.

The other example I would point to is the integration of blacks in the military beginning with President Truman's pronouncement. You can see this in the manpower needs of the Army in the Korean War. They did not want to expand the draft, they in fact mobilized reserves. They could not meet their needs and began drafting blacks, first in all-black units. I should say combat units because there had been all-black combat support units in the Second World War. There were no all-black infantry units in the Second World War.

DR. TEITELBAUM: When did the integration of the Army for racial purposes take place?

DR. JOHNSON: It was 1951 when President Truman signed a Presidential Order directing it. The Army was interested because of manpower requirements and you can see this also within the Navy. The Navy had policies up until the 1940's concerning Asian Americans and the jobs to which they could be assigned and how they could be deployed. An imperative that you should not forget about for all militaries is really the need for manpower or people. You can see this clearly in the case of, for example, Germany. Germany has a draft, but it does not draft women. They have perhaps 750 to 800 women in the military, all nurses. It is the only specialty where women are allowed. They do not need the manpower.

They cite historical reasons but if you look at the Second World War, there were thousands of women within the German military during the Second World War who were both drafted and assigned a wide range of jobs. Today, you have less than 800 but only as nurses. The assumption is that women can't handle the military.

A lot of issues within the military get driven by the requirement for bodies. This is a point you should not forget. The military is really not a social institution nor is it in the business of social equity just because it is nice to do. A lot of their programs are really driven by efficiency and effectiveness. Another example of that would be family programs today.

The Army spends a lot of resources and puts a lot of energy into family programs, not because families are nice but because there is data that demonstrates that family programs improve reenlistment, improve unit performance. It would be very hard to defend the amounts of resources and time that go into those programs if you could not demonstrate their effectiveness to the Army as an institution.

Unless there are other questions I would like to start with Dr. Jackie Motteren and then move to Drs. Steinberg and Harris. Jackie has looked at gender-integrated basic training and I think that the data are fascinating and the stories she tells as asides are even more fascinating. There is a lot of human interest that goes on in basic training. With that, won't you start, Jackie?

DR. MOTTEREN: Thank you, sir. For the past two years, I have been working with the gender integrated basic combat training program. Essentially we began in the summer of 1993 at the request of TRADOC, our Training and Doctrine Command. They were interested in the issue of whether or not we should begin integrating training at the lowest level which is at basic training. Furthermore, should we begin training down at the squad level which is the littlest building block within the Army system?

We went on board and did a first phase of the study at one of the large training centers for combat support and service support personnel. All of our research efforts center on those MOS's (Military Occupational Specialty) because as you all well know, women are excluded from the combat arms MOS's. The males in those MOS's are trained primarily in OSUT (One Site Unit Training) training for infantry, armor or whatever.

We did a second phase of the study, again addressing the issues of should we be doing integrated training at another training center the next year. We have compiled all that data to this point. We are beginning a third phase of the project. I will be at a training center next week starting another round of the study and this year we have decided, with the chief's decision last September, to integrate training. This year we are going to focus on how we improve basic training in the integrated environment for the CS and CSS folks.

Fort Leonard Wood, Missouri, and Fort Jackson, South Carolina, which are large training centers, will be involved in the study phase this year. We will be studying four companies, one battalion, at Fort Leonard Wood and six companies from two different battalions at Fort Jackson. Our efforts will focus on asking soldiers about their expectations of the Army, their expectations of basic training. Then we will also ask about their experiences during basic training and their attitudes and opinions about what has been going on with them.

In the first two phases, we also did a great deal of field observations. I spent a lot of time on the ground at all the training ranges with all the soldiers and their drill sergeants so most of our data draw from the surveys which we had them complete. We also did field observations and we ran focus group discussions with both soldiers and drill sergeants so we have a nice blend of qualitative and quantitative data on the subject so far.

Major things that you might be interested in specifically are that the females in the training centers in the all-female companies, while being trained at the same standards for basic training, had training content that was actually a little different. The best example I can give you was observing companies going through an obstacle course and the drill sergeants for the all-male companies. If a male failed in a task, the drill sergerant would be yelling at them, encouraging them, telling them to get back on course and finish, and the whole unit would be there yelling. In an all-female company when a female would fall and not complete the same obstacle she would get up and laugh about it and kind of be embarrassed and shuffle back into the line but there was no one there saying, "what are you doing, think about what you are doing, get back over here, you are going to do it again." Those kinds of differences were very subtle but they were also very real.

With the integrated companies that we followed, we saw the drill sergeants using more of the male model where they were encouraging and pushing everyone and indeed in the integrated training environment, where we have both males and females integrated down to the squad level, we find the drill sergeants are pushing the soldiers more. Consequently, we are also finding more females going on profiles particularly with lower leg and foot injuries. Many times the females are pushing themselves because they don't want to fail in front of the males. They don't want to fail. They want to be in the front of the run, they want to be performing and so they are pushing themselves harder and we have seen higher profile rates.

Sick call rates for the females have been typically a little bit higher than for males and that is standard comparing all-males and all-female companies as well, so that is nothing new or different. The females have been performing very well in the integrated environment as have the males in the later phases. We found no difference in the standard performance measures such as their qualifications on the run or basic rifle marksmanship; nor on any of the other PT events or on the IPT, the individual skills test. It is done at the end of the cycle.

So performance is steady for all the groups regardless of whether they are training all-male, all-female or an integrated company. That is encouraging. One of the interesting things is that the males tend to become more negative about the females being in their companies and in the Army during BCT. One of the things we are looking at and we are going to explore in more depth this time, are some of the reasons that might be happening. I think it may be in part due to some of the old contact hypothesis research which says that if you put two unequal groups together and they continue to be treated differently, they become more negative about one another and they become more prejudiced toward one another. If they are exposed and you change the situation so that they are working together and they don't see major differences, several other things are met, then they will become more positive.

We are still seeing some of the more negative and I will also tell you that the drill sergeants do treat the females a little easier. Partly that is because most of the drill sergeants, somewhere around 60% of the drill sergeants are from the combat arms. We had a very small percentage of female drill sergeants. Less then 10% of the drill sergeants are female so there are not good female role models there, either for the males or females. There are also issues with the males not being familiar with working with the female soldiers, with training with them, and they have to overcome some of their own background and cultural differences. They have to change their training and their views of how you train females and how you train males to how do we train in an integrated environment.

MAJ SUTTON: What do you see in those female drill instructors as compared to their male peers?

DR. MOTTEREN: They are tough. I love those female drill sergeants. They are the toughest I have ever seen. I keep coming back and saying, if I go to war, I want those guys in my foxhole. I want those female drill sergeants. As far as the female drill sergeants, the best way I can explain it is they know they are very select. They know they are under constant scrutiny. They are trying to prove themselves not only to the soldiers but also to the other drill sergeants. One of them said, almost a direct quote was, "I was told by my battalion commander that when I came on the trail, when I started becoming a drill sergeant, what you have to do is put on an iron face and keep it there," She further said, "at first I let some of the soldiers rattle me a little bit; I quickly determined you have got to keep the iron face so it is the constant, guarded iron demeanor. You are tough with everybody."

When we talk to the soldiers they, in fact, tell us the female drill sergeants are very even-handed. They are tough with everybody. They tend to be a little tougher for the females but they are just tough. So the female drill sergeants who are out there performing well get a lot of respect from everyone around them. If they are not top notch, they tend to get devalued very quickly and lose respect, both from the male drill sergeants and from all of the soldiers because they are in a situation where they are being compared constantly.

The response of the male drill sergeants to the female drill sergeants is also a critical thing. The female drill sergeants tell us that they have more difficulty getting the respect of the male drill sergeants, getting them to listen to their instructions, getting them to let them take the lead in exercise programs or whatever activity they are leading. They have to keep constantly reminding the male drill sergeants, "look, you don't always lead PT, I can lead PT, too." So it is a battle that is ongoing. There is lots of data both on the female and male drill sergeants as well as on the female and male soldiers as well.

DR. MARLOWE: I have a couple of points. Having spent time looking at integrated basic training in the late 1970's, I think one of the things we saw was the male view that developed very rapidly and was very complex. They were bonded to the women in one way. They also saw them as watered down soldiers which cheapened the experience in the sense that PT prepares you for combat.

The other thing I am most interested in, my observation at the time, particularly after some meetings with TRADOC, was the rationale of the people who ended integrated basic training. The central issue they kept bringing up was the large number of women who were put on profiles because of stress fractures from splints, etc. There was no way women could keep up with the men in either running or marching without this happening and this became one of the central things that was used. I guess some of the same thing is happening with large numbers of women being put on profile?

DR. MOTTEREN: Not large numbers. We are down, somewhere between 14 to 20% will go down with some kinds of profile, primarily foot and lower leg.

DR. MARLOWE: They are wearing running shoes now.

DR. MOTTERN: They are wearing running shoes for PT but for the road marches, they still do those in combat boots, for example. Those began as early as the third week of training so we still are getting some of the problems associated with breaking in boots. That remains an issue, I think.

We also are looking at ways of being creative with our conditioning. I think one area we can certainly improve is looking at what kind of conditioning exercises we need to be doing with soldiers in those first few weeks of basic training to really try and help the females and the males who are not well conditioned and not accustomed to running or walking, and not accustomed to wearing leather shoes, do some of those things.

I think that is a continuous struggle for us. We also found that the drill sergeants can contribute a great deal to some of the male mystique of basic training by making inadvertent comments. For example, the story of the group doing their first road march and carrying packs. One of the battalion commanders in the first iteration decided that he wanted to see if he could reduce the injuries to females primarily but to all the soldiers by lightening the pack load. So everybody went out with a lighter pack. That evening in the mess hall, they were with a male company and the guys from an integrated company. The all-male company guys said, "I thought I was going to die out there." The guys from the integrated company said, "you guys are a bunch of sissies, you are weenies."

So then they got around to discussing what was in the packs they were carrying and the men discovered they were carrying a lighter pack so they were subjected to quite a bit of reverse ridicule. They rushed back to their drill sergeant and said, "Drill sergeant, why are we carrying a lighter pack?" The drill sergeant said those famous words that haunted him for life which is, "Because there are women in your company, because of the females." Everything that happened throughout the training cycle that they saw as being a little different or they did not think was what it should be, was because there were women in the company. They were naturally more negative about having females in their company because they thought it was degrading their training experience.

DR. MARLOWE: How much of it is real? One of the things we saw was that the things people were most concerned about were not real so the biggest story was that if you want an integrated training company of 78, 79, you did not get things like that in practice, the pugilistic practice. Nobody in the Army was going out and banging other people with a pugile stick. The people in the integrated companies really believed that everybody else was out doing these things and we do not do it because we have women.

DR. MOTTEREN: Some of it is real in the sense that some of the male drill sergeants do treat the female soldiers a little bit easier. They don't yell at them as much because they think that is going to upset them or they will give them different kinds of details or tasks to do. They are not as quick to drop the females and "smoke them" as the drill sergeants say; make them do push-ups. So there are some differences. Then there is a drill sergeant who is out running and starts to call a cadence to motivate the soldiers during a formation run and then stops and says, "oh, I can't finish that because the ladies are here and that is demoralizing."

DR. MARLOWE: We are far more sensitive to them now but one of the things back then that drills were most concerned about was the possibility of doing anything that might lead to charges of sexual harassment.

DR. MOTTEREN: They still are very careful about that.

DR. MARLOWE: Do you think that explains at all some of this "indulgent" data?

DR. MOTTEREN: It does somewhat I think because they are very afraid of fraternization or improper association charges. To be honest with you, some of the female trainees will walk up to the drill sergeant, look at him and tell him several interesting sexual acts they would like to perform with him at his leisure. The male drill sergeant may or may not be interested but he certainly does not know what to do with the situation either, in many cases.

DR. TEITELBAUM: He is not trained?

DR. MOTTEREN: You are trained but actually experiencing it and hearing about it are really two different things. I think for some, particularly if they are young drill sergeants and have not dealt with females that much, that is very awkward and it is very uncomfortable for them.

DR. TEITELBAUM: With regard to injuries and such, I don't know if this is comparative. It may come up later. There was a Rand study in the late 1980's about the difference in medical calls and so forth between women soldiers and men soldiers before all the deployments took place. From what I gather, they also said women had more medical calls. However, compared to all the different types of activities, apparently the male soldiers had other activities than women that made demands on the military medical system. The men had more sports injuries and that is the next thing I was going to raise. What is the sports injury rate?

DR. MOTTEREN: I don't know what the sports injury comparison is, to be honest with you.

DR. MARLOWE: Very little time for sports.

DR. MOTTEREN: Basic training, you really don't think sports, huh?

DR. TEITELBAUM: More in your regular units.

DR. JOHNSON: That is where you find the data you mentioned about sick call, from the Rand Study, that has held up and it really holds across all services. There is a slight difference between male and female, slightly more females lose duty time to sick call but it is a relatively small difference. There were other factors that account for an increase in lost duty time for males.

DR. MARLOWE: In some studies we did over the years, there doesn't seem to be much of a difference in the actual amount of lost time for sickness between men and women; more presenting symptoms for women but not more bed rest, not more quarters.

MAJ SUTTON: Dr. Mottern, I am interested in solders who actually wash out of basic training. What does your data show you in terms of any significant differences in the reasons that females soldiers wash out versus male soldiers?

DR. MOTTEREN: We really have not looked at that before but we are building in a whole new piece tracking that in this phase of the study. We are going to be looking at specifically those issues and we are developing a short, one-page questionnaire that we will hand out to all those soldiers who are washing out before they leave post asking them some questions and getting some more information. We are going to track them back in with our training questionnaire so we will have a data base where we can look at them separately and compare them to those who were successful.

MAJ SUTTON: So it sounds like both on the enlisted side of the house as well as the officers (such as the female captain promotables), that you are looking at the folks who, for whatever reason, either wash out or decide not to stay on active duty. We may be able to learn some more about the reasons explaining that phenomenon.

DR. MOTTEREN: I am looking at the enlisted but Bev and Alan are certainly the experts on the officers.

DR. STEINBERG: What we have done is look at various aspects and one of the things that has come up in recent times is that, although the Army makes decisions based upon its personnel needs, it is called upon by various groups and reports to Congress. Questions are asked such as how the Army is doing, with respect to sexual harassment, in terms of equal opportunity kinds of issues, glass ceilings and so on. When we look at our survey data, one of the things we do is we look and we see what kinds of differences on different kinds of issues exist.

For example, if we have equal opportunity data it is logical to look at gender differences and race differences. We have looked as well at some other kinds of issues where you would not necessarily expect to find a difference and we found some surprises. When you just look at survey data and you see differences, it does not tell you why.

We go out into the field and we conduct interviews to try and understand what the issues are that are involved. What we have begun uncovering is there is a lot to understanding about how males and females view different kinds of issues. Some of these things we did not quite get to find out, things which you all are really after in terms of your own research. We are hoping to hit on it blindly, some of the things, so what I would like to do is just give you the feeling behind some of the things we have found.

The first thing is that when you are doing research on male-female differences, Jackie basically touched on some of it, it is a sensitive thing to point to a male-female difference either in a title of a study or even in communicating it; also, how you go about doing the research because females are very anxious to fit in. The goal is to be a soldier, not to be a female.

There are various stages that the females seem to go through depending upon how they are adjusting at that particular time but very often the phase is, "let me just blend in, don't point out that I am a female, treat me like everybody else." This is with many things that you might think are too subtle to pay attention to but that really get them angry.

I will give you a couple of examples so that you get the feel of it because obviously if you are going to look at female issues, you need to be sensitive to it. At one particular location, when we went to do interviews, we went as responsible researchers, designing beforehand how many people we would look at. We decided we wanted half males and half females but that was not the same ratio as the people, males to females at this location. We knew that, but for our design we wanted half of them to be males and half of them to be females because we felt that it was very important to look at not only what the differences are but what the similarities are. That is a very, very strong thing that you need to take into account. My advice is, don't design a study that just looks at females.

We did this and we were interviewing in three different rooms at the same time so the interviewers did not have a chance to consult with one another until after, until the lunchtime break. We met, we looked at one another and we said, "what is going on?" The females were furious. They would come into the room and you could see them stiffly sitting in the chair and some of them just outrightly angry and after a while the story came out. The females had noticed that proportionately more females were asked to be seen to be interviewed. Some of them had a meeting in the ladies' room and had discussed what this was going to be about. Is this another one of those groups who is coming after us asking about sexual harassment and by the way, any topic that they have seen over and over, that they are more sensitive to? So if you do PT standards or physical kinds of things or whatever, you will come across this and they were very upset about it.

Now, it turned out that was not our agenda and eventually they relaxed during the interview. We were able to talk about their feelings and their concerns. I will not tell you where this was but I can tell you these were very high ranking people, comparatively, where they have been through a lot in the Army and it was unexpected at that level that they would react that way.

Another typical example is in the beginning of courses that are integrated throughout the Army. You have the basic NCO course and the advanced NCO course and you have CAS[3] on the officers' side. You have a lot of leadership courses that are part of the Corps that everybody takes. Commonly, there is an assembly in the beginning, sort of an introductory assembly telling about the course. Everybody meets there together and on that first day, someone covers sexual harassment. What the females tell us is that they again cringe in their seats, not wanting to be noticed because the men then end up pointing the finger at them. Apparently one of the things that gets communicated is that females may want to use their position as females to get back at males one way or another, either earn credit in a course or pass something they don't deserve by charging somebody else with some inappropriate act; this message comes throughout.

Another thing that frequently happens in the Army is that there are fewer females in the courses and what happens is that they divide them up. They have small group sessions with 12 people per session; one female. Another group of 12, with one female and so on. They are isolated and any of you who have read any social psychology material know that they are just without any kind of support group. They feel clearly different. They have been marked different that first day as part of that introduction in the large auditorium. They say, "many of you have never been in a class with females before, let me tell you how you need to behave." In the courses when they divide up into small groups for projects, the female is kind of left out of it or when they take a break for lunch, the females don't know what to do because they can't go off to lunch with one male. You have to be with two males so that stories don't go around about you, and it can't be the same one each day. So it is not like finding somebody who sympathetically sits next to you, and if there is another female in the class, there is still a problem with just two.

One may want to fit in and not want to be tagged with the female in the group and may want to keep as separate from the other female as possible. Or if they band together and they are support for one another, they are verifying that female image. The instructor who wants to supposedly be fair may turn to the female and say, talking about tactics, "what is the female position on tactics?" Thus raising the gender issue when it is totally inappropriate as opposed to saying, "You have not spoken for a while, what do you think?"

It is a very difficult kind of situation because what is happening is we are treating it as if there is this set of rules that we can transmit to people and tell them how to behave without a basic understanding of what the issue is, so people are kind of memorizing the rules. "You do this with females, you don't do that," as opposed to understanding just how you treat another person.

One of the females said to me, "can you imagine what it would be like if we put one male in a group of females in a course for six or nine weeks or whatever it was, how they would react?" Everybody in the room just broke up because they realized that it was an impossible kind of a thing. It is a matter of understanding how things are experienced the other way. In one particular case, we were at a location where E-5's and E-6's were in a course that was at an all-male course but at that same location there were other males and females there.

They told me that as part of their briefings, they had been told that when they are sitting in the mess, if a female comes over to the table, they are to very politely ask the female to leave. I said, "oh?" They are saying this with a straight face. I said, "This was part of a formal presentation from your leader telling you this?" They said, "yes." I said, "why?" They said, "Well, there could be problems with a female at the table." I said, "What if the female doesn't want to leave?" They said, "Well, we were told that we very politely get up and move tables." I said, "what is so terrible about sitting at a table with a female?" They said, "Well, you never can tell what you might do wrong. I mean, you come in with a tray and you might accidentally bump somebody when you sit down and you will be touching them or let's suppose you are talking to somebody at the table and you sort of gesture like this, they might think you are pointing at them. It is a no-win situation and if you get any mark against you on this, it really will affect your career so what you need to do is avoid contact and that is how you will be safe."

So when they are forced to have contact in the higher classes they come in, they do not know how to behave. The typical thing that the females tell us is that a male will sit down on the first day, the first class, say, "excuse me, but I have never been in a class with a female before, I don't know how I am supposed to behave. If I do anything to offend you, please let me know." The females are sort of confused by this and think it is really odd and really weird and then they rationalize, "Well, maybe they came in the Army early and this was their whole career."

What is interesting is hearing it from the other side, hearing it from the male side where they are told if you are in that situation, you should say to a female, "Excuse me, but I have never been with a female before, tell me if I do anything to offend you?" And I asked, "Why are you told that?" They say, "Because, you know females, they will go and complain to somebody higher up and you will get into trouble so you want them to tell you first if you do anything to offend so you can take care of it there."

Of course, the females don't know this, fortunately, but what you see is a real discomfort in terms of working together and understanding one another. What I asked the males in this group who couldn't sit at the table with females was, "You know, those females are in courses with males right here. Can they sit at the same table with males in their course?" They said, "well, of course," at which point I said, "I don't understand. How come they can sit at the table with the females and you can't?" Their answer was, "They have to learn to work with them. They are in a field where they work with females."

One of the things we are hoping is, if this basic degraded training stops, that there will be more contact and understanding. Basically the females have categorized it, "Well, those combat arms types don't know how to deal with females because they have not had the experience and it is more abrasive."

There are a lot of stress issues that come up related to the way the females are treated. One, isolation is very stressful. If they are in a unit assignment, it is also a problem. Who can they talk to? Let's suppose they are the company commander and there are not other females at that level. If they are with their Executive Officer too much or with the first sergeant too much, it is a one on one, it looks like fraternization. Image counts, there is no support. One of the things we also found is women look for support among others and when women are together, this is seen as threatening to the males. It is like they are plotting against us kind of thing.

Male cohesion is good, female cohesion is not good is the message that is given. So what we have is people who are trying to be better than the best so they can prove themselves to be better than the best so they can be role models for others coming up along the line. Being isolated, often being the ones who take care of families and when a lot of females are married to others in the military, those issues come up when they become sort of like a single parent because the kid goes with them when they are not assigned to the same place as the spouse. So what we are seeing is a tremendously high stress level and I think Dr. Harris could deal with that on the promotable women that decide to leave the Army.

DR. MARLOWE: I am sitting here open-mouthed and I will tell you why. I find it absolutely fascinating. Many of the things you have described for the maintenance of sexual distance from men to women are the things that for years were described to us in the co-work program by NCO's as the requisites for maintaining the same social distance from their junior enlisted. You could not sit at the same table with them. That would be fraternization. They would try to manipulate you if you had a beer with them. On and on and on.

DR. STEINBERG: Right, and now fraternization is at the same level with males and females.

DR. MARLOWE: Right, and it is a transformation of that aspect of Army culture that I find absolutely remarkable because it is designed obviously to maintain the same arbitrary social distance between the two.

DR. STEINBERG: What seems to work is if you have time to get into the system. For example, the females have told me stories that when they get to their assignment, the first thing they were told was, "I wanted a male in this assignment, I did not want a female." If the female can persist and excel with all the stress that is involved and gain the credibility, then she can work into the system, but there is a special stress in the newness of each situation.

If you watch many of the females that I have watched describe what it is like the first week on a new assignment, they will say, "It is hell." You have got all this prejudice facing you that you have to overcome. Yet it is easier in the assignment than it is in the schoolhouse because, you have the credibility of your position and authority and there is a chain of command that supposedly you can go to for support. You are sort of on your own if you are at a course for months where there is no basis for credibility and that is even more stressful. The women, by the way, think it is very good timing to get pregnant when they are attending a course because the physical exertion will not be so much. They time it that way but the men are furious and they treat pregnant women in a class very poorly.

DR. MARLOWE: Just one other question. I don't know what level you go up to but does the same pattern exist at the War College, NDU, ICAP level?

DR. STEINBERG: I will tell you a War College story. The women decided that they were isolated in these separate groups so much that they needed support from one another and one of the women said, "I have got an idea," and she sort of contacted the other women that she passed and she said, "Anybody who is interested, let's have breakfast together tomorrow morning, 7:30 we will meet in the cafeteria."

A fair number of women came, they met in the cafeteria informally, they just sort of pushed tables together, it was nothing very organized, just to eat breakfast. After a very short time, they began to get very uncomfortable. The men were watching, staring, whispering, pointing, wondering what was going on, what was being planned.

DR. MARLOWE: Many had just gotten off the train at the Fenwick station.

DR. STEINBERG: Well, I have got to tell you that those women at the War College stage were so intimidated that they decided among themselves that it would not be safe to leave together and they decided to stage it so that they would leave the room separately in small groups and they never met again.

DR. ROSEN: Can I make a comment on that? A female chaplain who went to CGSC described trying to do that there and being turned down by the other women for that very reason, that they were afraid that that would happen.

DR. STEINBERG: There was one at a CGSC session that did arrange it and they had a support group and when I tried to meet with the person who had organized it, she didn't want any part of it. She didn't want anybody to know why they felt they needed support and what they were doing. It comes up spontaneously but they try to hide it.

DR. TEITELBAUM: Can I ask a question? Is there not the kind of, so to speak, a culture or tradition that people can draw on? You say they are under a tense, isolated stress from everything from books to movies to integration into industrial settings. I mean, we see this all the time in our society, it is in the newspapers. Is none of this translatable to the military? Are we such a strange beast that everything is going to be perceived differently by the individual or by the gender group?

DR. STEINBERG: I am not saying there is nothing we can do but a lot of it has to do with leader development and how it is done and how it is put in the system to help leaders understand how to cope with the situation. The most difficult thing seems to be describing to the men how the women feel.

DR. TEITELBAUM: Women police officers go on patrol together. We see that in the movies all the time. Is there no parallel there?

DR. STEINBERG: They go home at night to their communities. It is not the same thing as working very, very long days, constantly without the other's support. They live in their own communities with their relatives and their own other life style and supports. I have got to tell you that the women in the police department have many of the same problems so they have not necessarily solved them. That is the point so that we understand that there are problems.

DR. TEITELBAUM: But it is comparable.

DR. STEINBERG: Yes, some of them are. I think it is more exaggerated in the Army.

DR. MC CARROLL: I have a question. Do you find that instructors in these places have had to modify their language? I don't mean in terms of risque stuff. I mean in terms of male-female or political correctness and that that, in any way, affects the interaction of people because of the use of language requirements changing?

DR. STEINBERG: I think the instruction to instructors is uneven in the sense of I don't think there is one massive program that is given to all Army instructors that is going to say what is going to happen. In an individual school when they experience certain kinds of problems they took the instructors and they talked to them and they said, "these are some of the issues and this is how you need to deal with it." The individual instructors are often doing things that are by whatever rules they have been given without necessarily understanding what the issue is or how the student feels. As a result there is a certain kind of resentment on their part of, "Why do I have to do this or treat them so gingerly? Why should it affect my career?" Then the resentment gets communicated.

So, for example, one female told me about a course that she was in where there were not enough textbooks to give out that first day. She told the instructor and he said, "I will get it for you," which he continued to say for the next month and she never got a textbook.

Because she was never looked at in class and because of his other kind of mannerisms, she put together a feeling that this person had a problem with females. When I said to her, "why didn't you do something about it?" she said, "Because he did all the other things correctly." There was nothing I could say and point to and go to somebody and say, "this is wrong."

Another example was when a female was going to give a presentation. She got up to give the presentation and the instructor said, "you may not give the presentation until you have put on lipstick." I said, "what did you do then?" She said, "well, I weighed my options. I had three more weeks left of the course. I could get him angry and we could be in a fight and then it would come out on me. I went and I put on lipstick." So there are a lot of things happening at once. It is not so simplified as well, they can't say certain things in class.

DR. MC CARROLL: I was really getting more at the idea of if you have got to talk to another type of person, whether it is a trainee, woman, whatever, when you use a special language then that makes communication much more difficult because the words you use maybe perhaps are not the same.

DR. STEINBERG: I can tell you the language I have heard from those females is not sensitive at all so that if we are talking about from where you are coming from, you really do not need a different language.

DR. MARLOWE: The tenderness that you are communicating that the instructors and others are being told to approach women with, are the kinds of things that impress me, these PC things that seem to be terribly counter-productive in terms of creating exactly the opposite of the environment that you want. I think that is what Ed is talking about.

DR. HARRIS: A great deal of it is institutionalized. There is, in terms of building in the response to the sexual harassment issues, in some senses an exacerbation of the problem. In a lot of their interviews, for instance, we have females and males telling us that they now can't meet with a female with the door closed. They have to have another person in the room. This becomes something that has to be purposeful. A major who is counselling a female, for instance, has to go and find another female to come into the session. In some circumstances that probably makes sense. In other circumstances, it probably doesn't.

DR. MARLOWE: It kind of inconveniences everybody, doesn't it?

DR. HARRIS: The females have to do the same thing so there is a heightened awareness. They are constantly heightening the awareness of the issue, the difference and whatever it happens to be.

DR. TEITELBAUM: Universities are the same.

DR. HARRIS: Right. We had an interesting interview session with a particular division that was very high performing, not a "follow-the-rules" sort of division. They ignored the PT requirements and all the rules. They had their own set of requirements and rules which applied across the board, males, females, it didn't matter. What we were hearing from both the males and the females in this division was it was really having a positive effect. Not only was it improving everyone's performance, it also had the attitudinal effect of saying, "oh, well, I guess everyone is the same here." You know, no one is getting special treatment. If you were not top, you were out. It did not matter what rank you were, it did not matter what sex you were, what race you were, nothing. They were there and they were set up to maintain the top quality across the board.

As a consequence, the females had to push themselves. When Jackie was talking about the effects of the basic training, here is a situation in the field where people are having to perform and they are doing it. Now, are there injuries? Yes. There were a lot of jump injuries in some of these cases but that was for both males and females. They had an awful lot to say about the medical facilities there not being adequate. Everybody was yelling.

In a lot of what we have done lately, as Dr. Steinberg pointed out, you can't presume that that is a female thing because what we are finding is, across the board, people are having the same kinds of problems. We had a situation come up recently where the females were saying that there was pap smear day on the installation and swallowed kind of hard and said, "what is pap smear day?" They said, there is a requirement that you have to have a yearly exam. I don't know if that is the same with males, we did not get a chance to check that out but for females they have to have a yearly exam. As part of that, obviously, you have to have certain tests and the pap smear was one of them.

Two things came out about that. They were not done by doctors which was really upsetting everybody. They were being done by what is called a physician's assistant, some of whom, according to these females were not trained. They were people who were pulled in from other MOS's because of a lack of staff and obviously the downsizing is probably affecting some of this. They were not trained, not adequately trained. It was a joke. It was being dealt with in a very unprofessional way, not only leading up to this day and I say day, I think there were multiple days but it was a big thing. There was a lot of talk about jokes, comments, off color kinds of things that were done before the day and then afterwards. These individuals would talk about this outside of the environment and when we opened it, we had two questions that we were testing for a survey that had to do with the medical facilities and the treatment that they were getting.

I think they said something like, "how helpful is the treatment?" The first time we put this out there, they said, "never mind how helpful," they said, and every single one, they "just went off." Now, again, a lot of this was both male and female. Male things, for instance, in terms of the jump injuries, not adequate orthopedic facilities, at a place where obviously that is going to be a big issue.

DR. MARLOWE: We have been saying that about Womack for 40 years.

DR. HARRIS: So some of these things we have been hearing over and over again.

DR. MARLOWE: I am just surprised, a physician's assistant, a real physician's assistant is highly educated with a degree from Duke or Baylor or one of the other places and highly trained. They are better at emergency medicine than the docs are.

DR. HARRIS: A lot of these are at troop medical centers, not necessarily in the hospitals. They apparently have got a lot of different types of facilities at some of the installations, not just hospitals or emergency rooms.

DR. MARLOWE: There is a focus to try to move a lot of it to the troop medical clinic which is battalion-based.

DR. KNUDSON: The physicians' assistants I have met, they have the same demeanor as physicians.

DR. HARRIS: I don't know who they are pulling into this.

DR. MARLOWE: The others would be 91-Charlies who are LPNs. They are licensed practical nurses for training. I am just surprised.

DR. HARRIS: But again, these are some of the issues that are going on. Another piece of work that we did in the 1990 and 1992 framework, had a question on stress and we had a few social support kinds of questions. About a third of the junior officer corps, that is second lieutenant through captain, on a nine-point scale, were reporting seven, eight and nine. So there is an awful lot of job stress now that is out there. I think a lot of the interviews that we have done are pointing out that, as the workload is increasing, and the personnel are decreasing, there is an awful lot of stress.

At the same time, there is a fairly high number reporting that they had, again it is sort of a rudimentary social support scale, a fairly high level of social support and also fairly good coping strategies. We had a question there on use of different strategies to handle stress and I think over 90% are doing this. "Do you feel that you can influence the way things turn out in your life?" Again, a very high percentage are saying this.

In the study that we did for the promotable females, the passing came down and said, "Why would a female, a captain promotable to major ever leave the Army?" It was unthinkable. Because they are good to go as far as the Army was concerned so we just need to know why the females are doing this and we said, "Well, we want to know why the males are doing it? No, we just want to know why the females are doing this."

The presupposition was that it was because of family issues, a somewhat reasonable presupposition. At the time we were designing the study, we had a trip request outstanding to go to a major installation. We took the opportunity to also do a study with male and female company grade officers at the same time because we were bound and determined to get some kind of framework in a context to be able to evaluate some of the information that we were getting.

I am sure everybody is aware of the bonuses that were being offered during the 1992 time frame, cash bonuses, fairly substantial cash bonuses to leave. Of the 41 females on the promotion list who took that bonus, we interviewed 30 of them. 41 actually took the bonus. We could not locate the other 11. Every one we did contact agreed to participate and so we did a telephone interview. Again, it was very time sensitive. Not only because the people were leaving but also we had to kind of rush to get it done.

What we found was a very substantial portion, over 70% of them, were saying that there were job and career issues as well as family issues for leaving. As I believe Alma mentioned earlier, most of the females are married to other military so some of the family issues are quite complicated.

The other thing that was happening was the females who were married to civilian males also have a little different situation because most of their spouses want a career; they want more of a stable job situation. They have difficulty finding jobs when they have to move around to different locations. So even for those females who are married to civilians, they have more complicated issues.

The joint domicile issues came up in a major way. The career advancement issues came up. They felt that although the Army thought that being promoted to a Major was good, they, on the other hand, felt there were a lot of limits in terms of what they could do from a career standpoint. A lot of these females, had they stayed in the Army, really wanted another command and the likelihood of that from their own perspective was slim to none. The likelihood is that they are very assertive, very achievement-oriented individuals and they wanted another promotion; they didn't want to just get to Major and stay there.

DR. NORWOOD: What branches were these women in? Medical corps, nurse corps?

DR. HARRIS: No, they were not. There were nine different branches. There were no medical. We had aviation as well as general engineer, military intelligence, military police, ordinance, quartermaster, signal and transportation. There was a very good cross section. The in-person interviews we did were field artillery, quartermaster, ordinance and engineer. What we found was that a lot of the things we were hearing from the females were the same things we were hearing from both the males and the females in terms of making their career decisions.

DR. STEINBERG: "Did you get a good OER on your last command. What did your branch assignments person tell you?" All the same kinds of things plus, and that is the extra stress I was talking about. So some have had sexual harassment and discrimination occur; some were getting after-effects from having recorded sexual harassment which was just as bad and, then family kinds of things so there are the same constellation of things plus this whole extra aspect that was "the straw that broke the camel's back," and they said it was not worth it.

DR. MARLOWE: For what it's worth, the highest levels of psychological symptoms and stress that we have thus far seen, the first time we saw levels that were higher than we recorded in Saudi Arabia a month before the war began, was in 1993 at an Army post here in the CONUS with the chaos at head command, climate problems and the chaos in downsizing. It was just much worse.

DR. HARRIS: When we were doing the field interviews, the additional component that was different was, of course, they were still in the Army. These other females had already decided to leave. Obviously, they were not experiencing the same stressors.

DR. MARLOWE: You know, there is an interesting finding in studies done of the collapse of the rubber industry in Akron. There was as much and in some cases greater levels of psychological symptomatology and stress on the part of those who were not fired as those who were fired. The survivors suffer equally with those who lose their jobs and people tend to forget that this is a very global effect to come back and bite the ones who remain.

DR. HARRIS: One of the things we are hearing over and over is that the workload is going up, deployments are going up, the resources are going down, not only financial but personnel resources and there is no prioritizing going on right now. I think part of that is because the structure has not really been solidified and they are not quite sure how they are going to do work and get things done with the force that they have. There is a lot that is going to be there for a while and without this prioritizing it is going to do it.

DR. TEITELBAUM: In the area of measuring stress responses and coping and social support, I have two questions. One is, even if what this article says is true, what we all have learned is that women tend to be smarter, quote, unquote, do better on tests, etc., in the military as elsewhere in our society. Is there not a way you could control for these factors in your studies that would demonstrate effects of both their background and their socioeconomic background as well because these kind of factors may play a role? One of the stories I remember hearing was on an unnamed post where somebody said, "you see those people there that are getting over there, those black pregnant females?" When Lenin looked at the test scores, the females had better test scores than the males and the blacks had better test scores than the whites. So the black females were the smartest ones on the post, so to speak. How do you control for these things?

MAJ SUTTON: Can I just interrupt for a moment. One thing I have been dreading to do is bring this fascinating seminar to a close. I am aware that we are already six minutes past our assigned closing time. If folks' schedules permit, stay, could we wrap this up in another five minutes?

DR. STEINBERG: She has a good story to tell.

DR. HARRIS: We were in the field, not doing anything to do with females but the subject came up that when they were getting ready to send people, to deploy, an order came down to a unit to their top interpreters, to put together a unit of really top notch interpreters. It just so happened that they were all female. Well, the order came down again that said, "put together your next best set of interpreters because we can't send your top interpreters," It happened to be a female company commander who had been getting this craziness and she finally said, "Sir, why, you told me to get my best interpreters. I got my best interpreters. What is going on?" He said, "well, the commander in the field will not have female interpreters." She said, "who is the commander?" I have to admire her perseverance because she said, "who is the commander in the field, sir?" He said, "it is an infantry commander and he will not take female interpreters," so they sent the next best, however many levels they had to get to. Which is unfortunate because who wins in that circumstance? I don't know.

DR. TEITELBAUM: But how do you study that? How do you survey it?

DR. ROSEN: No wonder nobody understood what was going on.

DR. HARRIS: True. In a way there is an interesting thing that has happened as we have gone out in the field more and more. We are hearing that there is an awful lot of stress. The only survey data that we have also implies that there is a fair amount of social support and a fair amount of coping going on with the stress. One of the interesting things that has been happening is, you are looking for a direct relationship between stress and a health outcome or a retention or a readiness or whatever outcome variables you might be looking at. You might not get an effect because I think you have a population that is pretty resilient, particularly the females. I mean, they are smart and I mean, they really are capable. We interviewed a company commander who was in charge of the biggest company, 230. Was she under stress? Yes. It was very clear that she was under enormous stress.

DR. STEINBERG: We actually saw how they treated her. It was to the point where we were in the interview room, and suddenly she stops speaking and she just pointed like this. We turned around and looked and we saw two shoes at the edge of the door there. I went over and I opened the door and the man nearly fell in. He said, "oh, do I have the wrong room?" Then he walked down the hall and he watched to see if I would watch him to see what room he would go into. There was all kinds of walking up and down the hall and harassment and everything else going on during our session with her that had not been present with anyone else. She had reported sexual harassment and they were getting back at her, you could see it.

DR. HARRIS: The other thing that happens is a whole complex of things when we asked people why they were leaving. There was not just one answer. It is hard to tell what was the straw that broke the camel's back and so sometimes we might have to build in, as Dr. Teitelbaum was saying, more of these kinds of things to tease out some of the relationships.

DR. MARLOWE: I think one of the things never done, you are absolutely right, is the tremendous degree of supportiveness in the Army environment. It covers a lot of terrible stresses. Many years ago officers working for Max Thurman reported that working under Max was their most stressful assignment. But at the same time they considered themselves to be supported by their peers and their immediate superiors at levels that were almost incomprehensible so there was no question of leaving. The best description of it was the Thurman policy that everybody was to go home at 1700 on Friday to see their families. The leadership division was working on an action and at 1730 Max came in and said, "what are you people still doing here? Go home to your wives and children," and they said, "but, sir, you wanted this first thing on Monday." He said, "that's okay, you can come in on Saturday and Sunday but go home now."

DR. JOHNSON: I guess to sort of wrap it up, I think you have heard some of the recent data. The answer to one of your questions is that women who come in the Army are a lot brighter and the selection system is biased to insure that. At the enlisted level in particular it requires higher GT scores for females than males. You have to have a high school degree. We take no non-high school degree females.

DR. TEITELBAUM: That is discrimination, right?

DR. JOHNSON: The Army is a meritocracy. It is concerned about performance and the policies really are directed at performance. The concern with the integration of women is really a performance issue. It is not a social issue as much as it was with blacks. What I find fascinating about the data is that much of the issues you heard mentioned really reflect differential treatment in practice as opposed to differences in policy. I think part of what it reflects is the long time it takes organizations to change. If you look at the time course of the integration of blacks into the military, it was really not until the 1980's that you began to see routinely a fairly even course. That had a much longer and more intense effort behind it than is the case of the integration of women.

The other reason I think piglets and giraffes captures a lot of the issues, is there clearly are differences but the differences are on a distribution. It becomes an issue of where on those distributions does it make sense to make policy to exploit this. It is still too soon to know.

DR. STEINBERG: Let me just add that we are leaving one or two copies of a couple of things with you.

DR. ROSEN: I am leaving my address with you, if you could send me some of your reports.

DR. JOHNSON: There really are not many reports, as I mentioned we have the Max WAC's, the Ref WAC's in the 1970's and only two or three reports since then but we can make copies available.

DR. ROSEN: Whatever you have.

MAJ SUTTON: Sure, and thanks so much to each of you.

Military-Induced Stress Responses in Women

Edna R. Fiedler, Ph.D.

Today, Dr. Fiedler will be speaking with us. Dr. Fiedler is the Chief of Clinical Psychology at the Research Service at Wilford Hall Medical Center and she's involved in training with the Internship Program. In reading over your CV, what was really striking to me is the interest and combination between research and clinical practice. In particular what seemed to jump out is your work with training including basic military training. Some of Dr. Fiedler's work has involved gender issues, probably more than I can tell from this CV. She's involved in the women's health initiative looking at biophysiologic underpinnings and how that affects outcomes.

The other thing that was interesting is the variety of your experience. I noticed that you had done some work on gender and ego strength, which I would be interested in hearing about. The exciting part is the practical nature and focus on training, which I think is something that we've heard throughout. I think the combination of research and focusing on training issues is really where it's at.

DR. FIEDLER: Thank you. I'm Edna Fiedler. I was told I was going to talk about the Defense Women's Health Issue Program we're working on. Now I've been alive about a half a century and talking is one of the things I can do for a long time. I brought along a structure to keep me from rambling. I only brought along five copies because I didn't know we would have this many people here.

To introduce the players in our group, there's myself. As well as being Chief of the Research Service for Psychology, I also (and this is the operational side of the house) screen all Navy and Air Force recruits during in-processing at basic training. We're screening them for prior to service psychological issues that might make them psychologically unsuitable for the military. There can be a lot of reasons for that, but that's the operational bread and butter part of my job that will come up a little later.

Elizabeth Heron is a neuropsychologist. She was active duty Air Force and did her post-doc fellowship at the University of Southern California. She is very aware of active duty issues because she was active duty. She's now Chief of Neuropsychology. Currently she's totally swamped with the Persian Gulf, as perhaps some of you Walter Reed people are.

Richard Peko is a fourth year resident in psychiatry; however he also has a Ph.D. in Biochemistry. Mark Ledbetter is our source to the commercial business world. They own the instrument we're using, Psycore, and they're letting us use it for free.

We had several objectives. One involved people with head injuries and is thus from the practical, neuropsychological side of the house. We get people who come in a few years later. There is no normative data on our young men and women in terms of neuropsychological base rates. Of course, there's the ASVAN as you all know. That doesn't have anything that gives us more of a screening program. There is nothing which we can compare our young people to who seem to have this tendency to ride around without helmets on motorcycles, to say nothing of battle trauma.

There was a need to get that kind of normative database. There was also a need to use that to turn around for later job selectivity if it was relevant because we will be able to track these people if we choose through what you would call their MOS (Military Occupational Specialty). One of our purposes is we want to find out what these people look like. We, of course, have what I already do which is the prior to service biographical data, and then we're tracking them. Although Lackland is the only base for Air Force training, there's never been a systematic computerized program to look at their medical data. All their medical data has been going into charts and written up but nothing has been put on the computer. There's never been a way of doing a mass analysis of what these folks look like.

One objective is to examine these individuals. That sounds really simple, but it's like the beginning of science. The second one is to look at whether people excessively use medical resources. We have these independent variables over here, we have demographic data which we can collect off of my instrument, and then we're going to have the neuropsychological battery. You have two boxes here, biographical data and demographics, and you also have the neuropsychological.

We want to use those as independent variables to see who does and who does not excessively use medical resources. "Excessively use" is a term we've come up with. We know there will be certain things in the summer. We will have a lot of women in with blisters. There's a big sex difference on blisters because the boots seem to be much harder on the women's feet. So we know there are a few basic gender differences. We also have people who will show up at the dispensary 30 times for vague complaints. Air Force basic training is, including weekends, only 45 days. It's important that they show up because it's a short time frame. We want to see what's going on with those people. That is one of the things we're going to be looking at; how they use the medical resources.

The other thing that we're collecting, which again is going to be combined into the database, is information off their MEPS (Military Enlisted Personnel System). We consider this a part of the medical data. We're going to put this medical data from prior to service with the medical data in basic training. What we're really interested in is taking medical utilization as a third box down here. We have biographical data, neuropsychological data,and medical utilization. Then we try to develop an algorithm to see if we can predict who gets kicked out of basic training and who doesn't and why. We will probably push this into some regression analysis.

We had to negotiate for time with basic military training requirements. We had to find a time and a place to do the neuropsychological testing. We also wanted to make sure we had a control group of men. I don't know if that's exactly a control group, but that's what they called it. It also will let us test gender differences. Right now we've collected almost exactly half of our sample and will know their ethnicity. I think it's just going to be the five basic kind of groups for ethnicity.

There's a problem in the Air Force whenever we try to study ethnic data because we really have very few hispanics, very few Asian Americans and maybe 1% American Indian. I think when we're talking about ethnic differences, it will probably end up being blacks and caucasians.

However, there are some things that come out, which you're probably aware of. In terms of sickle cell anemia, there was a woman recruit that just died in the Navy. She was sickle cell anemic trait and then something happened. We were looking at our medical records on a committee on which I sit. People don't like to talk about other people that die during basic training and we don't really have that many that die.

That's what we were hoping to do. It starts from being very descriptive; getting an idea of what these people really look like and developing some basis for anything that might come down the road. We also go into a predictive model, which basic training people are very interested in.

Our subjects are going to be approximately 1,500 female and 1,500 male recruits. As I've said, we've collected about half of this data. We know the time they come into the service. I don't know if people talked about this before, but even though our accessions go down in January, the illness rate reflected in use of mental health resources does not go down. There's probably a different type of recruit coming in and that's not written up in here. It's one issue that I, from my screening point of view of 90,000 people with the Navy, am interested in.

I want to make sure I comment that the medical data is being collected in cooperation with another group from Brooks Air Force Base. They also have a Women's Health Research Project and they're collecting data on all women recruits, but just injury rates. Since they're collecting it, we're able to just pull it right off their data disk. That's been very helpful. We also are helping them collect the data.

Our instruments are called the "History Opinion Inventory." This is the instrument that we give to all the Air Force recruits on day one of in processing. It's given also to the Navy, but we're not collecting data on this study for the Navy. This is a routine kind of screening program, but it has construct validity and the factor analyses are showing that the constructs are holding up quite well. After we developed the construct validity, we also went in and did empirical validity. The criterion for making a good score or a bad score is whether or not you graduate from basic training. That instrument was developed with that empirical criterion, graduation from basic training.

It's done by computers, so I will talk about that when I talk about the procedure in just a minute. It takes about 45 minutes. It looks at memory, attention, reasoning, spatial processing and reaction time. I say that to make sure people don't think it's an IQ test. You might be able to analogize over, with a little bit of confabulation, to an IQ measure, but it's really more of a neuropsychological test. The third one is simply medical records. As I said, it hadn't been done before. One group is collecting it from the medical, we're collecting it from MEPS, and then my office is merging all the databases.

These recruits show up on Wednesday night or Thursday night and wait a long time; this is how the Air Force does it. If you ever come into San Antonio Airport, make sure you look to the right where the Military Reception Center is and you see all these civilian young men and women beginning to look more and more scared depending on how long they've been sitting there. They sit them there for a few hours until they get a bus load and then they bring them out to Lackland at night. They've taken up some of the U.S. Marine Corps ways of doing things.

They're brought out to Lackland and bedded down. They usually wait until about midnight. They bed them down and they get them up at 4:30 the next morning. They go and get their haircut, the men do, and they get their uniforms. Your uniforms at Air Force basic training are BDU's, so they're comfortable. They have a few chats during the time with various training instructors. At that point, right after they have their haircut, when they've lost their civilian clothes and their civilian identity, we give them the HOI. They're very honest at that point. They're also kind of tired, which is sometimes a problem. They're tired because they haven't slept and they're scared to death. That happens routinely. We test 700 to 1,000 people a week. That goes into my database and we pull those people out. That part didn't require any changes, we're just going to merge them.

The medical databases, including psychiatric and psychological, are located in different places. The MEPS is located in their chart so we pull charts for all the people and take that data in. The medical data, as I said, was also in charts so we are pulling that. The psychological resources are all located in the building where I work with the clinical providers. They're the ones who see all the basic trainees. If you're a basic trainee and you have a psychological problem, you come to the building in which I work; or if you come through my program and we think you have a problem, you come to that building. Then you see recruits in what's called the Behavioral Analysis Service. Their database is fairly computerized. It's a little sloppy but they're working on it. That is going to be fairly easy data. We're pulling it out now. We will know if they came in for psychological reasons, and out-patient, we will know if they had medical in-patient. Recruits may be scared to death, and they may be sleepy, but they are not stupid. They quickly know that 4:00 p.m. is the time to say you're suicidal. If you say you're suicidal at 2:00 you come to our clinic. If you say you're suicidal at 4:00, you go to the emergency room and you go straight upstairs to the fourth floor. Once you're on the fourth floor, you usually don't return to duty. The fourth floor is the in-patient psychiatric unit and that's where Dr. Peko is. For everyone who is coming in as an in-patient, their data comes from the psychiatric staff. That data is a little harder to obtain than regular medical records.

As a matter of fact, psychiatry after the Boxer Law Amendment, is having a real problem because they had something like 72 beds and 68 were taken up with recruits in various and sundry kinds of distresses. The recruits quickly find this out. I think it's power to the ingenuity of youth to figure this out.

Then the other part of my work is the neuropsychological testing. We really have to compliment the basic military training staff for their assistance. They turn over a large enough room for us. We have our computers set up in a room and we test at 6:15 in the morning until 7:15 in the morning. We're there by 6:00 to start the procedure. They lose no basic training time. They're already up. Instead of doing a cleaning detail or whatever they might have been doing, they come over to us. Then we turn them over to their next 7:30 appointment which would be career counseling where they get all these briefs about careers.

We were very worried at first because we get these guys at 6:15 in the morning. I can barely walk out my front door, I don't know how they're going to be able to take the tests -- of course they're young, I mean it really helps. Then we realized, they've already been up an hour and a half and had breakfast and had walked two to five blocks to get there. They're actually fairly awake. It's only at about 2:00 p.m. that they start to fall asleep.

We've been able to get that data. Of course, we've had all the problems with computers breaking down. That's usual. We're collecting data every day, five days a week and will continue collecting data until July 31st, when BMT kicks us out of that building.

We're putting all these databases into one large database merging them by Social Security number. Microcog will be the identifier. In other words, if they went through Microcog, they should be in the large database. Then we're going to start on our analysis. That is, in a nutshell, what we do. Are their questions or comments or any reactions?

DR. FULLERTON: Approximately how many days have they been in basic at the time you see them?

DR. FIEDLER: For the biographical data, they have been in one night. For the neuropsychological battery, we don't start that until the next Monday so they would have spent four days in basic training.

DR. MARLOWE: When they come in, do they go directly into their training company?

DR. FIEDLER: Not any more. Well yes, they do go directly into their training squadron, but there are now two days of in processing.

DR. MARLOWE: In the Army, there are usually three or four days in what's called the Reception Center before they're sent out to companies. That's the time to hit them because there's not much except administrative stuff.

DR. FIEDLER: That's really what they're doing on that Friday or Saturday, since they're coming Wednesday or Thursday night. We do put them in squadrons and in flights, but it's not considered a day of training since they've been in processing. The Air Force did not used to do that. The Army and the Navy have always done it.

DR. MARLOWE: They are in the organization that they're going to be in.

DR. FIEDLER: Right.

DR. MARLOWE: Two things which struck me when you were introducing it. One, everybody in the training community in the Army also talked about the marked differences between the recruits who come in directly out of school in the June, July, August, September group and the people who come in mid-year. There are massive differences in both behavior and quality.

DR. FIEDLER: Oh yes.

DR. MARLOWE: I realize this was the same in the Air Force.

DR. FIEDLER: We actually tracked the census in our building. You can just see it dipping down and then coming back up again. Then you can see the line of referrals and the line of referrals almost never changes. Percentage wise it changes. The number of people coming in goes up. Yes, we've talked a lot about why that might be, but I think all the services feel that. I know the Navy feels it.

DR. MARLOWE: There is a hypothesis that many people appear to have consensually developed, though I can't attest to it having any relationship to reality. This is a group that, having failed at initial post-high school endeavors or dropping out of college adjustment, now makes the decision to come in. However, it's not the kind of positive decision that's been made by kids coming directly out of school. Whether or not that's so, I don't know. I'm fascinated by what you're doing. I wonder if you have any sense of what you've been finding, particularly with the neuropsychological and male/female likenesses, differences or whatever?

DR. FIEDLER: These are Air Force recruits, and the only reason I say that is the average IQ of an Air Force recruit is 103. We don't take the lowest category historically.

DR. MARLOWE: Almost no one does.

DR. FIEDLER: We find that they're coming out really normal. They look like what they're supposed to look like. Of course, we have some that after an hour are still only half way through the test. We have a feeling that that person might have some limited abilities. You can see some of the men particularly, whip right through the spatial tests which I'm really bad at -- which is why I always notice this. Even after I've been standing there for months, I still have trouble -- but they took the test and they finished. I was still watching the first one.

DR. MARLOWE: You're using no measure, no psychological profile or measuring psychological symptomatology?

DR. FIEDLER: We will have all the information for those who showed up at the clinic.

DR. MARLOWE: No, I mean for the population.

DR. FIELDER: Well, the History Opinion Inventory has eight clinical scales.

DR. MARLOWE: Which one?

DR. FIEDLER: What we're looking at in the History Opinion will be, not necessarily in any order, social withdrawnness, emotional instability, antisocial behavior, and success in school.

DR. MARLOWE: You're not using anything like the SCL-90?

DR. FIEDLER: No, we're not. We're not using any off-the-shelf personality or psychological test. For about 8% of the people we will have that information.

DR. MARLOWE: What are you seeing? Are you seeing anything in terms of the attrition that's taken place thus far that appears to have relevance to the neuropsychologicals or the HOI?

DR. FIEDLER: Well, it looks like -- and I hate to say this because then I will come back next year and contradict myself...

DR. MARLOWE: That's only to be expected.

DR. FIEDLER: Good. This is somewhat of a disagreement between the neuropsychologists and myself. It's a scholarly debate. It looks like the neuropsych is only going to be registering those people who may actually have a learning disability that somehow got through school. The Air Force is fairly strict about that because we don't have a lot of the chip and peel kind of jobs. They really have to be able to read in the Air Force and they have to be able to take a blueprint so to speak or a schematic and put it over here. The Air Force really does get rid of LD people when they're picked up.

DR. MARLOWE: That's not failure in a sense.

DR. FIEDLER: No, it's not a failure.

DR. MARLOWE: It's not meeting the Air Force requirements. Are you seeing anything in terms of failure to complete basic training?

DR. FIEDLER: The things that seem to be predicting failure to complete are going to be the medical utilization, which will tell us a lot more, and the HOI. From the HOI point of view, it's going to be people who (I don't know if this is true or makes a lot of sense) are impulsive, neurotic, antisocial people. They do not make it through basic training. It's not just being neurotic, that's what I guess I'm trying to say. Neurotic is not necessarily a good term. I'm thinking of the people who are highly responsive to stress by showing psychological distress. Those people may actually make it through basic training, because the TI (Training Instructor) doesn't care. If they keep it inside and are just miserable and vomiting and nauseous and whining, no one is going to listen to them anyhow. They will make it through basic training. However, the people who at the same time show a lot of interpersonal disagreeableness, difficulty getting along with their flight and their peers, and who also just will not work, are the ones who won't do the job.

COL GIFFORD: What percentage don't get through basic?

DR. FIEDLER: In the Air Force, it's actually gone up tremendously this past six months. I just looked at those numbers. Ordinarily across time, it's about 7% men, 9% women (some people will say 8%, but it's approximately between 7 and 10% since we take in 20% women) we separate out. There is a big difference, about a 2% difference.

DR. MARLOWE: That's appreciably lower than the other services.

DR. FIEDLER: It's appreciably lower.

COL GIFFORD: When you said it's gone up in the last six months, is that before the last six months or over the same six months a year ago? This is because according to the seasonal hypothesis, it should be going up now.

DR. FIEDLER: No, there's a problem this six months. I don't know if anybody from the Navy is here, but in talking with the people that I talked to at the Navy, they're seeing the same thing; last year maybe so also. There's been a real problem for the recruiters.

DR. MARLOWE: All the services are having problems.

DR. TEITELBAUM: You mean this very last six months?

DR. FIEDLER: Yes, this winter.

DR. MARLOWE: This winter has been one of the worst for attrition in the Army, the Navy, and the Marine Corps.

DR. TEITELBAUM: It is not a cycle?

DR. FIEDLER: Well, there is a cycle, but if you look just at winter across the years, you see that this winter is worse. Our women are dropping, too. I think we might be up to 10 or 11% now, and that's really high.

DR. TEITELBAUM: You're relating this to recruiting. You're suggesting that it's the population coming in.

DR. FIEDLER: Right, and that's why I'm interested in our summer data because we will collect through June and July.

DR. TEITELBAUM: Do you have deferred entry?

DR. FIEDLER: Not like the Navy does. I don't know what the Army has.

DR. MARLOWE: The Army has a deferred entry.

DR. FIEDLER: We do have some deferred entry.

DR. TEITELBAUM: It doesn't pile up that way?

DR. FIEDLER: No, no, we have some, but not like you. The Navy has what do they call it, DEP?

DR. MARLOWE: DEP, the Deferred Entry Program.

DR. FIEDLER: Right, and we don't. I think our definition of a deferred entry is maybe 30 days.

DR. MARLOWE: We hypothesize that we lose a lot of people in deferred entry, but they're ones we would lose in basic training, anyway. They seem to be part of the vulnerable population. I guess the other thing, if there's a single powerful predictor in the Army, is whether or not you're a high school graduate. If you've successfully completed high school, and have a CAT3B and above on the entrance exam, you normally will make it through basic training.

DR. FIEDLER: See, that's not an issue for the Air Force. Everybody graduates -- I mean nine people, 10 people a year don't.

DR. MARLOWE: Yes, well it's 98% in the Army, but it's still the most powerful predictor.

DR. FIEDLER: Yes, I just looked at the numbers. In terms of the loss for BMT for Navy and Air Force for fiscal year '94, 2.8% of the people that didn't graduate did not have a high school degree; two negatives there. I think it was literally 1.8% of the people who graduated did not have a high school degree. We did have a big 1% difference there.

COL McCARROLL: Can you talk about your neuropsychological battery a little bit more?

DR. FIEDLER: A little bit, that's not my strong point, but I will be glad to.

COL McCARROLL: Is that a commercially developed package?

DR. FIEDLER: Yes, it's a commercially developed package coming out of Psycore. It takes about 45 minutes to take. You need headphones. It's also being developed so that people can use it for research, because it works automatically, kind of like the MMPI (Minnesota Multi-phasic Personality Inventory) does now on the computer.

COL McCARROLL: Is it based on the Halstead Reitan, the Luria or Nebraska?

DR. FIEDLER: I think that they pretty much started from scratch. I know the Halstead Reitan. First of all being on the computer makes it a somewhat different instrument. When I look at that and think of the Halstead Reitan, the one I always thought was really neat was the card sort. They're not replicating that sort of skill.

COL McCARROLL: But the categories testing --

DR. FIEDLER: They could, but they don't have that. You have memory testing where they will give you a little story. You read the story, then they come back and ask you a question. Then they have delayed memory and they tell you, "we're going to ask you this later," and then later they come back and ask questions such as, "who was the main character or what did Mr. Wood say?"

DR. MARLOWE: I'm interested, because we have a computer based neuropsychological that was developed and it's also being used by the Army and in parts of the VA and in the Gulf War study. There are about three different versions. There's a very long one and there's a short 45 minute one. I don't know if you knew about it because --

DR. FIEDLER: Beth has mentioned it to me, but you aren't using Microcog I don't think, right?

DR. MARLOWE: No, no. It's analogous to the Halstead Reitan as far as a computer based application.

DR. FIEDLER: Isn't there one that's also been developed (I don't remember its name) by somebody, I think he was with FAA? The Brooks Air Force Base people are using it. They're using a different neuropsych battery.

COL McCARROLL: You don't use the test where the individual is blindfolded?

DR. FIEDLER: No.

COL McCARROLL: The spatial forms perception?

DR. FIEDLER: No, the spatial forms processing is basically a screening. It's not an in-depth neuropsych eval. So your longer one would be an in-depth eval. One of the spatial processing tests involves a calculator keypad with nine numbers over here. Then they show you on the computer screen, for example, a block in the nine, a block in the one, and a block in the three. It will go off the screen and you have to go back and press that pattern. They also do some manipulation tests.

COL McCARROLL: Do you have any hypotheses on how men and women might be different on any of those tests or any data to support that?

DR. FIEDLER: I wouldn't have any data to support it. I think Psycore shows really classic gender differences, e.g. the spatial processing that the men are doing better but the problem is that's all with civilians. Some of the tasking involves a fair amount of spatial skill because that is important to the Air Force. That's really the task to show whether or not you're good at it.

COL McCARROLL: Does it produce an impairment index or anything like that?

DR. FIEDLER: Yes, it does. Actually, if I write your name down, I can send you some information on it.

COL McCARROLL: I'm just curious as to what that might be. There are not data existing in that form that I know of. Is that impairment index comparable to the Halstead Reitan?

DR. FIEDLER: I don't know. I really feel inadequate to answer your questions, because someone else is responsible for the neuropsych end of it. I've read the manual but I haven't used used it clinically. She's using it in the Persian Gulf people as a matter of fact, I think.

COL McCARROLL: We'll see what you have in a year.

DR. FIEDLER: Yes, that's right. I can come back and look much more intelligent.

DR. MARLOWE: Do you have any sense of any preliminary findings?

DR. FIEDLER: On the neuropsych?

DR. MARLOWE: On the neuropsych and what differences between men and women look like?

DR. FIEDLER: I'm sorry, yes. We're finding the classical gender differences on the spatial processing. The men are going to come out somewhat higher than the women. I mean it's a classic two curve relationship. The verbal skills are coming out with the women a little higher on the memory; the arithmetic I'm going to be interested in. On this test, they will give you a number like 473 minus 267 and you have to do it in your head, and you have to come in from the left and do it to the right. You have to do the whole problem in your head and then go back. I'm very curious. It looks right now that there isn't a difference, but it's basic math.

DR. MARLOWE: What is the overlap thus far of the curves?

DR. FIEDLER: Of the verbal reasoning and the arithmetic or attention to detail, we're not having much difference. It looks like it's going to stand out with that spatial processing.

DR. MARLOWE: But how far away?

DR. FIEDLER: I would suspect they're not going to be more than one standard deviation different. We're going to test 3,000 people, so we might get statistical significance, but I'm not sure it will be meaningful.

DR. TEITELBAUM: Could you go into the demographics a bit? You did mention the racial background. What about age and marital status and various other things?

DR. FIEDLER: The MEPS gives you an idea of some of the information we will have. We will automatically have their age and marital status from the HOI. We're only using active duty, so no reserves are being tested on the Microcog.

DR. TEITELBAUM: What are you getting so far? What is the breakdown in your population?

DR. FIEDLER: The mode is 19 years old; 80% are men; 20% are women; 80% are caucasian and about 12% are blacks. Then the others are kind of a mixture with the third largest group being hispanic. Then the marital status is 92 to 94% single.

DR. TEITELBAUM: Never married?

DR. FIEDLER: Yes, that's right. We divide it up that way, never married. Although we did have a woman the other day that is now leaving the Air Force. She's 21 and had been married twice.

DR. MARLOWE: Not a lot of energy.

DR. TEITELBAUM: Do you get many older recruits?

DR. FIEDLER: Not very many. I mean we do sometimes, but I would say maybe 2% of our people are over 22, 23. You do occasionally get them.

DR. TEITELBAUM: The minimum is 18?

DR. FIEDLER: Theoretically, yes. Although we've been getting recruits that are 17. I think they can get a parental waiver and come in at 17. I'm laughing as you ask me that, because we have Microcog set up to reject you if you say you're under 18 so you have to go back in and change it. Actually, I know exactly how many women have been under 18. It's not very many. A lot of them are almost 18.

DR. TEITELBAUM: Do you have any suicides? How does suicide break down by gender?

DR. FIEDLER: I think this is a really interesting thing. Maybe it's not quite right because we only have 20% women. You have to look at that as your base rate. The men seem to be much more into this as a reason to get out of the military than the women do. When you look at our numbers from the mental health clinic, you would expect 80% men and 20% women. Actually, I would say probably about 88% of our folks are caucasian men. We almost never see a hispanic woman; they just don't show up in the mental health clinic.

DR. MARLOWE: In the Army it is extraordinarily easy to arrange to get out during basic training. There's a very generous training discharge program, which I think affects the suicide gesture rate. Is it more difficult in the Air Force?

DR. FIEDLER: Yes, it's difficult to get out of the Air Force. Having been there six years, I've really seen it become more difficult. I was at a conference with the Navy up in Great Lakes and the Navy captain who had been running the basic training at Orlando had a nice story to tell. It was something he had done, so I really admired the fact that he said this. He decided that too many people were getting out of Navy basic training for a certain reason. It just didn't make any sense and he was right. Legally and in an administrative sense, he was right. He started hauling these people before the mast (a form of non-judicial punishment in the Navy), putting them in the brig, and making it a little tougher to get out. In fact, that reason for being discharged went down to almost zero, but overall discharge rates didn't change.

DR. MARLOWE: That's always been done. Discharge is fashionable. Wherever we throw you out. The easiest way is this whole issue of failure to adapt. The drill sergeant can recommend that any recruit can't do it and should go home. This is on the thesis that it's better to get rid of them now before we invest another quarter of a million dollars in him.

DR. FIEDLER: See, I totally agree with you. My whole screening program is geared in that direction. If they're really probably not going to make it, let's look at them more closely. It's better to get them out on the second or third day than the 30th day.

DR. MARLOWE: This is one of the issues we've talked about with the DCSPER of the Army. It's not how do we stop attrition but what's the reasonable level of attrition we should aim for and when do we want people to leave? There's a general agreement that we want them to leave when they're in the DEP, before they come in. If not we would like them to leave in basic training before we spend all this money training them.

DR. FIEDLER: Right.

COL GIFFORD: Do you have any sense or any way of tracking attrition once they leave basic? Clearly the Air Force --

DR. FIEDLER: I can track every Air Force and Navy recruit. I have a database at DMDC.

COL GIFFORD: You could use the database you're developing not only to follow basic but to see which ones have problems. I have no idea what the attrition after basic in the Air Force is.

DR. FIEDLER: That's right. That's exactly what we can do. I can track all those people the next four years if I wanted to.

DR. MARLOWE: What is the overall attrition rate in terms of failure to complete first tour of enlisted duty in the Air Force?

DR. FIEDLER: Oh, it doesn't go up much. It maybe goes up to 14%. It's much lower than the other services.

DR. MARLOWE: In the Army and the Marine Corps, it runs in the thirties.

DR. FIEDLER: Right, I guess for the women in the Marine Corps, it runs higher than that.

DR. MARLOWE: Well, they lose about 19% in basic training to begin with.

DR. FIEDLER: Yes.

DR. ROSEN: I remember the paper that you published about three years ago in "Military Medicine" in which you found that 40% of those who didn't make it through Air Force basic training had abuse backgrounds or something along those lines, I forget if that was the exact number. Are you going to be following up that paper?

DR. FIEDLER: We did as a matter of fact. Let me add to that statement that those were people seen in the mental health clinic. Forty percent of the people who got to the mental health clinic. As a matter of fact, we did a study of about 50,000 people and we found out in very simple terms through the HOI. We asked a very simple minded question, time is always of the essence for us. We simply asked them, "have you ever considered yourself a victim of sexual abuse and have you ever considered yourself to be a victim of physical abuse?" We did that for a year. In the Navy data (we did it for the Navy too, so actually the sample is much larger) we found basically the same thing. I analyzed the Air Force data. A Navy lieutenant handled the Navy data.

I thought a lot about this because I have political views about this. We found that if you think of basic training as a pipeline, 15% of the women entering basic training report sexual abuse in childhood or adolescence. We realize that doesn't match what the lifetime prevalence is, but they have many more years to experience this event. So they come in at about a 15% rate. The men are about a 3% rate, and it's primarily physical for the men. We then looked at who graduated. Of the people who graduated that fiscal year, 14% of the women reported abuse. The number of men is really small. We found that when women come in, 15% are abused by their report. When they leave, 14% of the people graduating reported abuse at some time. However, when we look at those women who are abused, (this includes everybody, not just people who show up in the mental health clinic) we lose10 %. That year we happened to lose 7.5% of our women. In that class, that abuse group, we lost 10% overall.

There is a higher risk. My problem and concern about this is the political issue that I carry with me. There have been comments by line folks who say, "then just don't accept anybody with abuse, just leave those women out." I react to that because I think, "they may have a tough time in their personal life, but -- I don't mean to sound callous -- we don't care unless it affects their job." I have to keep boundaries on this. So I have a political agenda that I just want to make clear to you.

DR. ROSEN: You don't want to ask the question because it may be discriminating?

DR. FIEDLER: Well, we actually did follow through. I mean that's what we found. We found that 10% of the group attrited versus 7.5 or 7.8.

DR. ROSEN: That's not a huge difference.

DR. FIEDLER: It's not a huge difference. However, it's statistically significant.

COL GIFFORD: When you flip it on the attrition, it's a third again as many. That's quite a bit if you look at failure rates.

DR. ROSEN: The other thing you pointed out was that you used a very simplistic question.

DR. FIEDLER: Oh yes. I really want to be --

DR. ROSEN: There's a huge range of what that 15% may represent.

DR. FIEDLER: Lieutenant Watson in the Navy did --

DR. URSANO: Before you go into that, did you examine that data controlling for socioeconomic background?

DR. FIEDLER: Yes, we looked at that. As a matter of fact, the Navy did it more in depth. We looked at it for ethnicity because of equal opportunity. It didn't matter what race you had, it was proportionate to the race.

DR. MARLOWE: Did it have any predictive value in terms of full first tour?

DR. FIEDLER: That we would still be tracking. I like to wait four years.

DR. ROSEN: What was that? I didn't hear the question.

DR. FIEDLER: For full term enlistment, four years in the Air Force. Lieutenant Watson at the Navy tracked a smaller group of the Navy people and some of these folks had been given the five factors personality measure. She did this for her dissertation. She concluded with a smaller sample, because these were people who for some reason came through phase two, there was a glitch. In other words, she took only women with glitches if you would. Something made them come into phase two of the screening program. She found that it was not abuse, but it was what was going on inside of them. In other words, you have women who have had very unpleasant to extremely unpleasant events. The instrument we can't judge. However that in and of itself did not make a difference once you look at what their NEO was. Their scores looked like Vicor's predictive model of the high N, low A, low C. There are some moderating factors that we know about.

Does that answer your question? Now the men who were sexually abused, and it's such a small percentage that experienced sexual abuse that admit it, are only about 1%. About half of those went out of basic.

DR. TEITELBAUM: You say admit -- does it change over time or is it just a one time thing that you did?

DR. FIEDLER: Just a one time thing.

DR. TEITELBAUM: You wonder if it's not a fashionable issue. I think recently at a high school in this area, half the kids said they were abused.

DR. FIEDLER: That could be. The reason I smiled was I was thinking we also get Appalachian hillbillies. We do get quite a range of people. I know the Navy out in San Diego is doing a big study on abuse. Were you aware of that?

DR. ROSEN: No, I wasn't aware of it.

DR. FIEDLER: Dr. Merrill, whose phone number I have, is doing a big study on that.

DR. ROSEN: Is this just recruits or people who are on active duty?

DR. FIEDLER: I think he did people on active duty. He has the data because he was talking to me about it. He has Navy active duty and he did maybe two hours of testing and questions. So if you're interested in that --

DR. ROSEN: That's not published yet.

DR. FIEDLER: No, he's writing it.

DR. ROSEN: Yes, I would be interested.

DR. FULLERTON: Can you say more about how you measure excessive medical utilization?

DR. FIEDLER: First of all, we're not going to look at what's mandated. You have to show up for allergy shots. If there is a staph infection that breaks out in a flight, we would not consider that excessive. There's prophylactic penicillin given as soon as the staph infection breaks out. That's a really deadly thing in the basic training environment. We lost three people in one year - two to staph and one to strep.

We're looking at a whole range of data. We have every single recruit's medical data in basic training being collected. We're going to (this sounds really simple minded) look at the average number of visits and then look at the people who got attrited. There's this simple difference between number of visits that were not mandated by the Air Force and everybody versus those who are in our group that didn't graduate and those who did graduate. That will be our line.

Then at that point, we will go into more depth and look at whether there were any specific reasons going on. We have the diagnosis from the physician. The physician in basic training has the same problem we do, the data is sloppy. When I said we do, I mean from the psychology point of view; sometimes the mental health codes do not fit in for a basic training environment. We're kind of stuck with them being stuck. We're going to go back in and look and see if there was excessive diagnosis; if certain diagnoses were showing up more in the loss group than in the graduation group. Obviously all the females will have GYN problems, and GYN problems won't show up in the males. So we're not going to factor that in as excessive use unless they really are excessive for GYN problems. We would have to compare women to women.

We start with number of visits. This isn't going to make a lot of sense, so I will explain it. There's a dispensary on what we call our side of base, which is on the training side. If you're really bad off, you go to Wilford Hall which requires catching a bus. Then we will have those records. They don't send you to Wilford Hall unless they have to. We will have both of those. So we will have number of visits in the dispensary and number of visits in Wilford Hall. We will have the type of diagnosis. Even though that sounds fairly simple minded, I think those are going to be our main ones. We have already found that among the medical providers (and I think we would find this among our psychology providers, too) there's a lot of difference in their diagnoses.

DR. MARLOWE: What is the essential process for going on sick call in that first basic training?

DR. FIEDLER: In sick call, theoretically, you're supposed to be able to go to your training instructor and tell them you want to see a doctor. Theoretically they're supposed to let you go.

DR. MARLOWE: Not to the senior NCO. In the Army you have to go to the first sergeant.

DR. FIEDLER: Well, they might send you to the NCO, but first you would go to your TI. Actually that's fairly strictly enforced, because in one of those staph infections they did not send him. They actually had him walk two to three miles to Wilford Hall and by that time it was in his groin. They amputated his leg, but it was too late. So the Air Force enforces it now. I don't think the Air Force is exclusive on this. I think sometimes we have to have a tragedy at our base before we do what we should have been doing.

DR. MARLOWE: This may sound like a silly question, but how demanding, how tough is that first basic training?

DR. FIEDLER: I've seen Marine Corps training and I've seen Navy training. I've never seen Army training. I lived at Fort Hood for three years. I would say I could pass Air Force physical conditioning, which always kind of makes me gleeful.

DR. MARLOWE: For Army training and Navy training, the first seven weeks are very much alike.

DR. FIEDLER: Here's what the Air Force does. The Air Force physical training is actually somewhat borrowed from the Navy and the Marines. What they do is they now have categories like the eagles and the robins and the wrens.

DR. MARLOWE: It sounds like they borrowed it from the boy and girl scouts.

DR. FIEDLER: They have these kinds of names.

DR. TEITELBAUM: No hawks?

DR. FIEDLER: There might be hawks. I might not have the right names. The first day of training you're tested, and you fall into one of these categories. They used to do it so that everybody had to run in formation. You had these mismatches and remember we had sex integrated flights. You would have a six foot four man just off of athletics with a four foot nine inch couch potato female and it was hard, especially for the four foot nine inch couch potato. They looked very closely at the Navy and the Marine Corps who have always done this. They've always started their people into training at MEPS, or told them to start training. Now you come in and you take a test and you get placed there. The big issue of this test is to see how fast you can run a mile or a mile and a half. If you run a certain speed you go here, a certain speed and so forth. By the end of basic training, everybody is to be able to run it in something like 12 minutes.

DR. MARLOWE: In running shoes?

DR. FIEDLER: No, they wear boots. Blisters -- oh yes. I was very happy because the Air Force, in whatever wisdom it had, went to tennis shoes. It did a study and found that the tennis shoes did better in terms of the blisters. This was a big deal. It's really hard to run with blisters. Then they went back to the boots.

(Laughter.)

That's right. We issued $30 tennis shoes, or sneakers, a generic name.

DR. MARLOWE: Part of this is because of all the time lost from stress fractures.

DR. FIEDLER: That's right, but you wanted to know what Air Force basic training is like physically. That's what you do, you've got to run that mile and a half in let's say 12 minutes, if I'm off a minute or so I apologize. I've jogged the confidence trail. I don't want you to think I've done the confidence trail. It looks like fun. There's a rope, you swing over the water, you've got to climb up, climb down. I saw the Marine Corps and it seems like by the time you're done in the Air Force, you still probably couldn't pass the first day of Marine Corps.

DR. MARLOWE: You're telling us if you take your kids out on the Air Force confidence course --

DR. FIEDLER: Actually, I'm telling you I could take myself out on the confidence course, which is even a worse statement. I don't know if I could do the rope across, that would require a little more strength than I might have. Everybody laughs at it but it's Air Force policy that that is not what they're emphasizing.

DR. MARLOWE: I guess my question really is, how stressful is it?

DR. FIEDLER: I think the Air Force does do something somewhat different. The Air Force uses a lot of mind games, because they're so limited in the other things. They cannot tell you to drop and do 10. If anybody sees you doing it, if another training instructor sees you using a physical method of punishment, they tell on you. There's a lot of verbal intimidation that goes on and a lot of games that are played; a lot of psychological games, a lot of threatening, and a lot of harassment, but everybody is equally harassed.

DR. TEITELBAUM: They are?

DR. FIEDLER: All the basic trainees are pretty much treated the same.

DR. TEITELBAUM: Regardless of gender?

DR. FIEDLER: I would suspect so, because we have some female TIs. You could balance it out. We have female TIs teaching male recruits. I think they are first of all TIs. So I would say that it's more that sort of thing than anything else. At the same time I think there's something that goes on. I don't want to say the quality of the Air Force recruit is better. I would say the quality of the Air Force recruit differs in that he or she comes from a life style that may not have been quite as demanding on your psyche. Some of the people in the Marine Corps have had a pretty hard life before they got there.

DR. MARLOWE: There are also differences in training philosophy. The Army does not allow psychological intimidation of that sort.

DR. FIEDLER: Yes, but they do. Although they will tell you they don't. We don't have air conditioning half the time.

DR. TEITELBAUM: Can you give us an example of what you mean by psychological?

DR. FIEDLER: Well, we have people who come into phase two for our screening program. They tell them, "if you don't give answers that I want to hear," -- this is a TI speaking -- "life is really not going to be pleasant for you." Except they say it a little more graphically and a little longer than that. They threaten them with unknown events. Remember, they're scared to death.

DR. MARLOWE: This is just not part of Army basic training.

DR. FIEDLER: Yes.

DR. TEITELBAUM: It sounds more like police tactics.

DR. FIEDLER: Well, I think there's a different philosophy in basic training.

DR. MARLOWE: I'm very intrigued because I think it's --

DR. FIEDLER: The TI's will tell you they don't do that.

DR. MARLOWE: It gives you a handle on the whole question of what kinds of stress are out there and their capacity to generate the stress --

DR. FIEDLER: We regularly have people come in. We can hear them because we have one of those old barracks. Most of the time the air conditioning is working but for a couple of weeks, usually in August, it's not. You have the windows open so we get to hear them. You can hear them as they walk by and say, "You see that building? That's the crazy building. If you get sent there, you're going to be sorry you ever got sent there." They're telling the whole flight that. Some of this you can hear by opening your window. What goes on in the dorms, I don't know.

DR. TEITELBAUM: Do they actually send anybody there?

DR. FIELDER: Well, with the Boxer Amendment it's very difficult now.

DR. TEITELBAUM: What is that?

DR. FIELDER: The Boxer Amendment has affected all the services. It's a whistleblower act by Senator Boxer out in California. My interpretation of it is she had two concerns. One was that, if you blew the whistle, you would get punished in the military by being sent to a mental health evaluation. The other was that the military tended to not treat their people well in terms of mental health evals and things. I don't know if some of her constituents had problems or what. The effect of the amendment is that if you are a commander and you want to send one of the people under you for a mental health evaluation (an out-patient mental health evaluation) you have to let that person have 48 hours for legal counsel. You would have to be willing to have the Air Force pay to have an outside civilian opinion, or at least find another unbiased opinion. It might be another Air Force psychologist. You can imagine on a small base where there's only one psychologist, it's going to be from the outside. At Lackland, it wouldn't matter.

It means that some of our squadron commanders used to be very sensitive to psychological issues and would send some of these people over. We took years training these commanders to get them psychologically sensitive. They had to have some hard knocks in their flights. Now they're not allowed to send them to us, unless they give them legal counsel and unless they do all those other things I just said.

DR. MARLOWE: Is that just for a standard referral or sending them to you for evaluation?

DR. FIEDLER: If it's directed -- no, that counts. That's why it's such a problem.

DR. TEITELBAUM: You say any command referral, as opposed to individuals who can go on their own.

DR. FIEDLER: Any command directed, yes. Oh yes, individuals could go and physicians can refer. My program is exempt and chaplains can refer them.

COL GIFFORD: They have to be willing to go.

DR. FIEDLER: They have to be willing to go, but they can be referred. It's just the commander cannot do it.

DR. URSANO: Do you know what the drop in the rate of commander referrals has been?

DR. FIEDLER: Oh zero, we have zero now. I mean really, maybe we've had two since October. Let me say there has been an 85% to 90% drop compared to prior to the Boxer Act.

DR. MARLOWE: Has there been a compensatory rise in chaplain and physician referrals?

DR. FIELDER: It's amazing, we still have the same number of referrals. You can be in-patient and you don't have to go through the Boxer procedures. The TIs are not stupid either, and that's why the psychiatry unit is so full of recruits. They're saying, "this person really is not someone who is going to work out." I think the training instructors are very good at catching the people mentally unfit for duty. I mean if you have enough people come through, you're going to have some like that. They may not catch some of the others. The ones who are probably having their first schizophrenic break, the TIs don't want to have anything to do with them. Before we would try to patch them together, maybe get them out, maybe get them back together before all that happened. Now they go for a two week minimum stay in the hospital. In-patient is exempt from that rule.

DR. MARLOWE: We studied that a million years ago. We discovered that every supposed initial psychotic break or schizophrenic break in the Army, when you went back to the family and community, showed that these kids had been having problems for years and years.

DR. FIELDER: They just somehow hadn't done anything.

DR. MARLOWE: They came into an ambient in which someone was measuring their behavior, which had never been done before. Or when it had been done, they had been able to slide by marginally. We didn't find anyone who had an initial psychotic break.

DR. FIEDLER: They don't know it, yes. In their mind it --

DR. MARLOWE: Some of them knew it.

DR. FIEDLER: Some of them know it, but say they never told anybody. Or I'm just like my mom. So that's what the Boxer is.

DR. MARLOWE: Don't decompensate.

DR. FIEDLER: That's what the Boxer Amendment is. However, it hasn't changed the referrals. They're just from other sources now, sources that are allowed.

DR. MARLOWE: Human beings are very clever about those kinds of things.

DR. TEITELBAUM: Do you really think that the Air Force recruits are smarter, or is that just sort of organizational?

DR. MARLOWE: I don't know, the average IQ of the entering class in the Army, if you will, this year was about 106.

DR. FIEDLER: Actually I've seen the Navy data. I keep saying Navy, because I can really know my numbers there. I can't compare with the Army. When I look at the Navy and the Air Force, the mode and the mean are basically the same. They may vary year by year, but they're basically the same. With the Navy, you get a more heterogeneous population. You get the curve coming down here on the bright end. The Air Force may cut off over here on the left hand side but Air Force and Navy are basically the same. I would assume it's basically the same with the Army, too.

DR. MARLOWE: Yes, every year there is a maximum quota for non-high school graduates, CAT4's, and it seldom has gone above 1.5%. The reason it's still there is that there are vested interests in Congress and other places who insist that a certain proportion of these people, no matter how minimal, still be taken into the service. It's a front end stack now that looks much different than the force ever did 20 years ago.

DR. FIEDLER: Yes, and I don't think the Air Force exactly goes along with that policy if they can at all avoid it.

DR. MARLOWE: The Air Force has always been able, on the basis of its "high technology," to have a different floor under its personnel acquisition.

DR. FIEDLER: The Air Force is very good at arguing that case. Nonetheless, the mode, mean, if they look different it's only because --

DR. MARLOWE: Even the Marines look the same.

DR. FIEDLER: I have lots of data on personality and different backgrounds. When you look at it, it's the same idea. The mode and the mean are just not, especially for the men, very different.

DR. TEITELBAUM: Do you have basic training followed by advanced individual training?

DR. FIEDLER: Yes, we call it something different. Here's how the Air Force works. I think the Army works more like the Navy. In the Air Force, you finish basic training and then you immediately go into tech school. I think what you're talking about is what the Navy does. They have basic training and then they have advanced training.

DR. MARLOWE: We have several different modes. One is on station unit training, and that's only for the combat arms. If you come into infantry, artillery or armor, you go through basically 14 weeks of training and then you're assigned to a unit. Everyone else gets advanced individual training whether their technical specialty is diesel engine repair or missile --

DR. FIEDLER: That's tech school for us.

DR. MARLOWE: -- or missile construction. We call it AIT, but it may well be a year long school.

DR. FIEDLER: Well, the Army used to train our mental health techs at Fort Sam Houston. Then for whatever political reason, there was a break there and now they're trained at Shepard. Something like 99 or 98.5% of our people go to tech school. We do not have this in the fleet, direct to the fleet sort of analogy.

DR. MARLOWE: Yes, well, you only have a small percentage of people who are in combat jobs.

DR. FIEDLER: The pilots are usually officers and so are the aviator crews. We don't have people walking around carrying guns. Most of the Air Force people wouldn't know how to shoot one.

DR. MARLOWE: You do have ground security force.

DR. FIEDLER: The security police, yes. They're trained at Lackland, as are the Navy and Marine. Then they go to Fort Dix.

DR. MARLOWE: They were trained at Fort Dix. I don't know where they are now that Dix has been downsized.

DR. FIEDLER: They used to go to Fort Dix. Those folks do, but what I meant was that we don't have a combat unit. You guys have a combat unit from officer down, we don't.

DR. TEITELBAUM: The claim we're hearing from the Navy and also sort of parts of the Army is that anyone who comes in and gets through the basic and the tech training, who gets married or was married when they came in is more likely to attrit. Do you have any indicators of that?

DR. FIEDLER: I could look that up really quickly. I just looked at Air Force because that's at my finger tips as opposed to getting on the modem to DMDC. We've run that through a lot of regression analysis, and we have not found that.

DR. MARLOWE: We have some in the Army.

DR. TEITELBAUM: We haven't found it, but it's become a myth. It's even been reported in the Marine Corps.

DR. FIEDLER: As a matter of fact, the people I've talked to, this is going to sound sexist, indicate that some of our women go out more than our men would. They've made these really bad decisions. They had a baby three months ago and they're in basic training, so they're homesick. It makes sense to me. It doesn't make sense why they came in. They should have waited a while. Or they're in a situation of single motherhood and they felt they needed to. They have a lot of conflicts going on, so they do seem to do that. Generally speaking, if there's a halfway stable family back there, I mean the nuclear family of the spouse and the child, they're very motivated to finish because that's going to give them a job.

DR. TEITELBAUM: Lastly, what's the pregnancy rate?

DR. FIEDLER: In basic training? Oh, it's not a problem for us. If it is, they're sure keeping it quiet.

DR. TEITELBAUM: Or they're not there long enough to show.

COL GIFFORD: I'm not surprised during the 45 days, but you're saying that all of these women don't come pregnant or do you give them pregnancy tests first?

DR. FIEDLER: Oh, if you're pregnant already. Yes, you do get a pregnancy test, and if you show up pregnant, then you're kicked out. It's an automatic discharge. They don't want you to go through basic.

COL GIFFORD: At what point do they get the pregnancy test --

DR. FIEDLER: Well, if they're only there for six weeks, I mean I'm not up on modern technology of finding out when you're pregnant, but I still think it's six weeks or something. You've got to be there long enough to --

COL GIFFORD: I realize that you're not going to detect the ones that get pregnant in training, nor are they going to go for tests anyway. You're not going to detect it. My question is how long before they arrive at training do you test them?

DR. FIELDER: It's within the first week, it's during in processing. It's part of their blood work.

COL GIFFORD: I have no idea if we do that in the Army. My impression was in the Army that there was a lot more time lag.

DR. FIEDLER: We run all that stuff right through. I'm actually trying to think about how they would get pregnant in basic training. I think in the first week -- well, they are 18 and 19, but they're pretty tired the first week and they look pretty bad. Maybe by the second or third week it could happen. They have to figure the system out. You've got to find a place.

DR. MARLOWE: Don't guys in the Air Force have the myth of salt peter in their food, which has been in the Army forever?

DR. FIEDLER: Actually, I've never heard that said. Maybe it's one of those private things they don't talk about.

DR. TEITELBAUM: Air Force food is better, Dave.

DR. MARLOWE: It really is very simple for most people. They're doing more physical work than they've ever done. They don't have nocturnal emissions or wake up with erections and they're convinced that salt peter, which mythologically depresses any possible sexual drive and activity, is put routinely into their food.

PARTICIPANT: Another alternative is terror, and that's not as nice to think about.

DR. FIEDLER: That's right. I think our pregnancy rate goes up in tech school. I could pull those numbers out and give them to you. However, in tech school, there are many more opportunities.

DR. MARLOWE: They're also there for a year right?

DR. FIEDLER: Yes, they're there for a long time. Most of our tech schools are three months to a year.

DR. MARLOWE: Also, you're off on weekends.

DR. TEITELBAUM: The Navy told us that when they send women onto ships, they do not test them for pregnancy before they go. They're thinking about it though.

DR. FIEDLER: Well, yes, I've heard some interesting stories about that from the Navy, but they're just hearsay. That is a problem.

DR. MARLOWE: Out of the first 14, 12 were pregnant before they came on board, two became pregnant.

DR. FIEDLER: Yes, which makes it look like 14 women getting pregnant on board, when in fact it's two out of 14.

DR. URSANO: I'm curious about testing before they come in. You would think just because of the risk of toxic exposures --

DR. FIEDLER: They're not testing what? I'm sorry.

DR. URSANO: Not testing for pregnancy prior to going on ship.

DR. FIEDLER: Yes, that's what I was thinking. There's all the things that go on.

DR. TEITELBAUM: It's a political agenda.

DR. FIEDLER: Yes, but I think you could really justify it medically. You're putting them in a hazardous condition. You could even say you're not worried about the mother, that you're worried about the --

DR. MARLOWE: It depends on the service regulation. The Army will deploy you and will keep you in all kinds of jobs during the first trimester. Then various regulations start coming in following the first trimester, and each service has a different set of regs on this.

DR. FIEDLER: Didn't the Army have pregnant females over in Kuwait?

DR. MARLOWE: In the Gulf, yes. There were a small number of women who became pregnant in the Gulf. It was actually remarkably a very small number. Primarily in the reserves, not out of the active duty force.

COL GIFFORD: Now the Army did withdraw pregnant women when it was discovered because of the concern about chemicals. The big issue now for all the services is that anti-malarials are not safe for pregnant women.

DR. MARLOWE: It's not safe for anybody.

DR. FIEDLER: In other words, women go to Siberia, is that it? Antarctica or Siberia. I'm sorry. I've just got this vision, we will send the women to fight the northern battles and men to fight the equator battles.

COL GIFFORD: That might work.

DR. MARLOWE: Then you have the danger of the sound.

DR. FIEDLER: Were there any other questions or concerns or comments?

DR. MARLOWE: No, we just all trust that you will let us know what you're finding out.

DR. FIEDLER: Yes, I will be glad to tell you. I think it's going to be interesting. As I said, part of it is just developing some standards for women that don't exist right now. It may sound really simple minded, but it will be used.

DR. MARLOWE: I think what I'm most interested in in terms of your neuropsychologicals is what is the overlap between the curves.

DR. FIEDLER: We will have that generated.

DR. MARLOWE: We all too often put far too much weight on differences where the differences are things that involve maybe 5 or 6% variance between the two populations. It really doesn't tell you very much when somebody does six PET scans that show definitive differences in the brain and therefore a cognitive structure difference between men and women.

DR. FIEDLER: Yes, let me make sure I wrote down what I said I would do. I said that I would get you the number for the abused men, and you wanted to know the neuropsych curves. I will have to go back and do it.

DR. MARLOWE: I will give you my card which also has my e-mail address on it.

DR. FULLERTON: Okay. Thank you very much.

Cognitive Measurements in Thermally Stressful Environments

John R. Thomas, Ph.D.

Today we welcome Dr. John Thomas to our consultation series. Dr. Thomas is with the Naval Medical Research Institute and I believe he has been with them since 1971. Since 1990, he has been the Director of the Thermal Stress Program there. When I spoke with Dr. Thomas briefly about what he does I noted that of particular interest to us is his work studying the effects of extreme environments on cognition and performance. Initially, I believe he and his group developed a performance assessment battery which includes some cognitive and psychomotor tests to look at the effects of hyperbaric pressure on performance and cognition. It is my understanding that they are now using that assessment battery to look at the effects of thermal stress on performance. I understand further that he has very little, if any, data on women. That is not unusual, as we know from our consultation series. We are interested in learning more about the performance assessment battery as it has been used to date. Perhaps we can brainstorm or discuss toward the end ways in which that might help us in the future to look at sex differences, if there are any on these types of effects.

DR. THOMAS: Thanks for inviting me. What I would like to do is tell you a little bit about the cognitive measuring instrument that we are using and how we developed it. I will discuss what we are using and how we use it. I will also show you some sample data that has been collected in stressful environments. We deal with thermal stress, mostly cold. I will conclude by showing data from one study that does relate specifically to gender aspects. Most of what I am going to talk to you about right now is sponsored by SOCOM which is the Special Operations Command, a joint Army, Navy, and Air Force organization. They have struggled for years with problems that relate to performance decrements that happen in stressful military environments, particularly for comparing procedures or protection garments or equipment. How do you get this all on one scale so that you don't have to rely upon a group of people saying, "I like this thermal protection garment. It is real nice because it is yellow," while other people choose the blue one. How do you know one is better than the other? The objective was to develop some sort of standard yardstick that related to cognitive, physical, physiological and psychomotor performance. Our tasking has been to develop that. This morning I am going to talk about the cognitive side of that.

There are the other components, also. We spent a year or so going out into the operational world to the Seal community, the Army Ranger community, and Air Force Special Operations to talk with staff experts in different areas about what they did, how they did it, and what they thought were showstoppers. We asked, "What kind of cognitive performances are really critical for what you do?" If something like an extreme temperature environment or lack of sleep or some other kind of stressor were to disrupt something, what was really critical and what was most important?

We put together a database that was based on all of the input from that. It is a very complex database that you can look at for a particular task such as mountain climbing, canoe paddling, or what have you. You can go through a list in order of what people thought were the most critical cognitive, psychomotor and physiological components.

We put that into another database and tried to get out of it the six or seven most critical abilities that are generally thought of as most important for almost anything we did. Let me give you a copy of this, and you can follow along with me. Just promise me that you are not going to turn the page and look ahead.

These are the general abilities that we came up with that Special Operations people in the field told us they thought were the most critical cognitive abilities. These are the kinds of things that we should try to measure. These are not in any particular order. They are the ones that came to the top of the list. Our task over the last year or so has been to develop a measuring instrument that could be taken out into the field to measure these kinds of abilities. The abilities that we decided to measure are memory, logical reasoning, vigilance, calculations, reaction time and the ability to acquire information. There is prima facie validity to these, as well as the fact that they actually came from operators themselves.

We wanted to develop some task that could be presented on a battery driven laptop computer that could be taken almost anywhere. The measures of the cognitive aspects are over on the left side of your charts. Actually, I have in my briefcase a laptop computer that has a demo of this program on it, if you want to see it afterwards.

Matching the sample is one test that is designed to measure memory. In this one, basically, the individual sees a matrix like a checkerboard that appears on the square. This has red and green cells, and it is on the screen for 2 seconds. Then it goes away for a variable amount of time, a delay period, and then you are presented with two matrices. One is exactly like the one you saw and one differs by one cell. It is an eight by eight matrix, so it is not really easy. If they think it is on the left, they push the left button, and if they think it is on the right, they push the right button. Let me just say that we did not develop all of these measures. The Army and the Navy have spent a lot of time over the last 10 years developing and selecting a range of cognitive measuring instruments, most of which go under the name of Performance Assessment Batteries or PAB's. The ones that we decided to use are some that we have developed in house. Some others have been developed in the tri-service community and have become almost standard. We are hoping that utilization of these tests in the Special Operations community will result in standardized application.

Rather than writing this ourselves in any language or using any of the programming languages that are out there, we decided to do this in a fourth generation authoring language that is user friendly. You don't have to know programming. All you have to know is, "I want a red square in the center of the screen," and it does all of the coding for you.

To write the tests and tasks is very easy. You just fill in these forms, and the computer will generate the code and put it all together for you. We are going to put out a technical report very soon that has all of these forms in it. Anybody who has the authoring language can change it any way they want to. Hopefully we don't want to change it too much or we are going to get away from standardization. At least they will have an idea of how it is used and will be able to change delay values or reaction time measurements.

Logical reasoning is a test that uses two letters that appear on the screen, A and B, and then a statement about those two. A does follow B. B is not followed by A. There are several different formats that may have double negatives. B is not followed by A when indeed it is.

Vigilance comes to the top of everybody's list of what they think is important. The test we decided to use is called the Alphanumeric Vigilance Test. On the center of the screen letters and numbers appear once a second, for example, B, 3, 6, C, R. They are instructed to look for an A or a 3. If they see an A or a 3, then they press a different key. If an A or a 3 is not one of the ones that is appearing on the screen then they are not supposed to do anything.

For calculations, we use what is called a serial subtract; that is a new word there, subtract. That is a complex mathematical abstraction, I guess. The test is simply what it sounds like. You see a number, a plus or minus sign, another number and then you fill in the answer. That one is interesting to some people because it will generate negative numbers. Negative numbers are dealt with by subtracting from 10 and then entering the number.

Complex reaction time uses four squares which are shown on the screen. There is a little red square in the middle of them, and the square moves around from box to box. You have to track it by pressing the right key that matches up with the box that is on the screen. We measure reaction time and the accuracy of whether or not they are pressing the right key.

The sixth test is designed to measure the acquisition of information or learning and is called repeated acquisition. Here they have to learn a sequence of key presses every session. The computer will generate a sequence of 12 key presses that are all on the arrow keys. A sequence may be left, left, up, down, down, right, left, right, left, right. The sequence consists of 12 of those and the object is to learn what that sequence is. Each session you generate a learning curve for each individual.

That is basically our cognitive measuring instrument. I have it on the computer here. You can take a brief look at it in a few moments. I will share some data with you very briefly.

The main area we examine is cold thermal stress. We have done heat and other things, but most recently we have looked at people in the cold. This is the matching to sample data that uses the checkerboard with two possibilities presented to you where you have to remember which one you saw on the screen. We use either 2, 8 or 16 second delays between the two. The top curve here shows a memory function that is at a 2 second delay. They are more accurate than they are at a 16 second delay. When you send them out into the cold there is a decrement in their accuracy in being able to remember what they saw on the screen. It is presumably a memory effect because the longer the delay the more it is affected by cold. The short delay is hardly affected at all. The longer the delay is, the greater a decrement in cold performance.

We have models of this phenomenon in animals. We have looked at changes in brain catecholamine levels and temperature changes in the hippocampal areas that relate to memory. We became convinced that it was the rapid release of norepinephrine and its depletion that may be related to this memory impairment. That led us to do some animal research looking at tyrosine as a pharmacological intervention; tyrosine being a precursor of the entire catecholamine chain. We wanted to see if we could bring catecholamines back to a normal level and protect against this kind of cold-induced amnesia as it is called. Indeed, in animals we were able to do that. We did a series of studies with humans using this matching the sample procedure in our cold chambers. Tyrosine was able to protect against this.

On the next page are some data from some people out in operational areas doing some training exercises in Alaska. The bottom curve shows the decrement in those that were given a placebo while they were out in the cold. Tyrosine was able to bring their accuracy back to within very close to baseline levels.

This is an example of using our cognitive measuring instrument to evaluate a pharmacological intervention and in this case one that is fairly successful in a real operational environment. These are individuals who were out in minus 23 C for about an hour or an hour and one-half before we got their measurement.

DR. SLUSARCICK: Is tyrosine in food?

DR. THOMAS: Tyrosine is in a lot of high-protein foods. We found tyrosine is also generated from phenylalanine which you find in products that have NutraSweet. Interestingly enough, people in the Seal community who spend a lot of time out in the cold tend to select diet drinks that have NutraSweet in them. Equal is almost pure phenylalanine, and they actually end up sprinkling that on all their foods and everything because somebody told them to do that. That is a good thing, but it is interesting that it relates to the tyrosine story. In a sense, they have naturally selected the same kind of tyrosine input.

Most recently we did a series, also in Alaska, using all six of the tasks. To give you an idea of the kinds of things you can expect to find, you will never find anything like all performances degrading at the same rate. It always depends. If you turn the page, and this is not a good one because in the slide this is in different colors, but let me tell you that what you are looking at in pre-cold on the left is a short delay and the one right next to it is a long delay over in post-cold. The tall bar is the short delay and the other one is a long delay.

We used a matching the sample procedure that only had two delays. It only had the 2 seconds and the 16 seconds just to allow us to get more trials in in a shorter period of time. Accuracy under both conditions for the short delay is around 85 percent. Post-cold is after about an hour and one-half in 30 degrees below centigrade. As you can see compared to pre-cold, the post-cold shows a selected decrement in accuracy of remembering it for a longer period of time.

This kind of decrement is a very interesting one. People tend not to forget their name or what their mother's picture looks like. It is the "where did I put my keys a few moments ago?" kind of phenomenon which gets reported by the same people whom we got this data from. They show a decrement in this matching the sample procedure and were not able to recognize some landmarks during their training operations that they were supposed to remember or they forget a very brief briefing that was held in the field under the same conditions. As they walked away, they had to turn to other people and say, "What was that? What did we just hear?" This one maps very well in terms of some real operational performances where we are picking up the same kind of short-term brief memory impairments that occur in cold.

The next page is a look at reaction time, and there we found that the reaction time itself was not affected by the cold. What was affected was the errors they made in following the little red dot around. They tended to do things out of order, to guess ahead or to lag behind, but the rate of key tapping will remain just about the same.

Grammatical reasoning involves looking at two letters and then a statement about it where they basically say, "True" or "False." You can look at grammatical reasoning in a number of ways. Some of the statements are positive all the way through to very complex double negatives. There was no selective cold effect. They just did worse across the board. They had a harder time dealing with logical reasoning in the cold with a drop from maybe 95 percent accuracy down to the high seventies.

The next page is repeated acquisition where they have to learn a sequence of 12 button presses. The pre-cold says that during baseline they made about 40 errors in learning that sequence over 15 trials. After an hour and one-half of exposure at 23 degrees Centigrade they are making about 80 errors; so, it is more than a doubling of mistakes.

What is interesting about that one is that if you look at the within-session acquisition they start off not knowing what the sequence is, and they have to guess. As they get the first position, the third position, whatever, the errors begin to drop out, and you get a learning curve over the session. By the time they get to the end of the session, which is 15 trials, they are almost doing it error-free.

In the cold, they will almost solve the pattern and then they will lose it and have to reacquire it again. They will work their way through that and maybe get it again and lose it. The errors are up by maybe two-or-threefold, but it is also a sequential episodic phenomenon.

The next pages show the calculations test and there is absolutely no effect of cold on that. The very last page is vigilance which I think a smart scientist had thought would be the one that would show large decrements because you have to pay very close attention all the time. However, the cold showed absolutely no effect.

What I am trying to show here is some sample data of how the cognitive performance measuring instrument can be used in the cold and the fact that you will get a different pattern of response, depending upon the particular abilities that you are measuring. There is not a uniform decrement or degradation in performance. It depends on the particular task. If you switch to other types of tasks like prolonged operations where there is a sleep deprivation, you will see something different than what you see here.

Let me conclude here by sharing data with you on this next to the last figure here which is labeled "Matching the Sample Cold Exposure Group." We were looking at the phenomenon of cold acclimation or habituation or tolerance or whatever you want to call it. This deals with how people get used to the cold when they are exposed to it repeatedly for a period of time. We had two groups of people, only one of which is shown here, namely, the cold exposure group which was operating at about 85 percent accuracy. This is all the delays put together. You are just looking at an overall accuracy here. Where it says, "Zero Session," that is their baseline performance.

With one group, we put them in the cold every day for an hour. This was at 4 degrees Centigrade, and they did the PAB. They did that outside of the cold chamber either before or after. They marched through 12 days of exposure to cold and a lot of the physiological changes that are associated with cold acclimation changes in core temperature such as changes in how fast skin temperature responds to cold. We began to see those physiological indices of adaptation. On the last day they go back in, and they do the PAB in the cold. They do just as poorly after 12 days of exposure to cold as they did on the first day of exposure to cold.

The other group went into the cold for an hour and one-half a day, but they did their PAB in the cold rather than outside. They got to do the PAB in the cold every day. Both groups are getting exposed to cold. Both groups are getting exposed to doing a performance assessment battery every day. The only difference is where they did it. The group that did it in the cold, by the 12th session, began to move toward their baseline. Our conclusion was that in order for cognitive behavioral performance to acclimate, you have to do it in that environment. You have to engage in the behavior in the cold, in the environment of interest, and that is what we talked about in that report. One of the aspects of that is if you look at it as they are returning toward baseline during sessions 6, 7, 8, 9 and 10, there is an increase in the variability and they never quite get back.

The group was made up of males and females. You can look on the last page where it is broken out as male and female. What seemed to be going on is that the males were returning closer to baseline. They were showing more of a behavioral tolerance or behavioral adaptation. The females by sessions 7, 8, and 9 began to level off at 60 or 65 percent and these are standards errors of the mean. So, for the last three sessions they are not even overlapping.

This is my one gender-specific difference that we have seen over the last couple of years. This was not of interest to us at the time. The way we handled this was giving the project to a master's thesis individual who got six more males and repeated the top curve. We put this away on the bookshelf for future use, but I thought it might be of interest to you. I have no explanation or anything to say, other than the phenomenon of decrement in performance that we see in matching the sample in cold does seem to be a catecholamine depletion related event. Specifically, it's norepinephrine depletion in the hippocampal areas although quite possibly other areas in the central nervous system. During tolerance to cold adjustments presumably there is more of a buildup of this and less of a depletion. Obviously, one would want to go in and do a study like this taking good blood measurements of catecholamines and other hormones and neuropeptides like neuropeptide Y that are known to be a modulator of that system.

DR. GABBAY: How many were in each of these groups?

DR. THOMAS: There were six males and six females in that group.

COL BELENKY: What happened to the core temperatures of the two groups?

DR. THOMAS: The core temperatures of the two groups marched along to a physiological kind of acclimation. With each exposure to cold you show a more rapid decline in core temperature. There is an immediate drop rather than a very gradual drop. All of the groups, even those who did not do the performance measures in the cold all showed the physiological changes.

COL BELENKY: There were no gender differences?

DR. THOMAS: No, there wasn't. As a matter of fact this seems to be almost a specific cognitive thermal environment; a stress kind of interaction.

COL BELENKY: On our PAB measures, we do a throughput measure which is a combination of speed and accuracy. What happened to speed in these folks?

DR. THOMAS: Usually in the matching to sample you will find that as you get a decreased accuracy on matching the sample, you will also get a decrease in their choice time; the time that they make the decision.

COL BELENKY: Would they go faster?

DR. THOMAS: No, they are going slower. They are not trading speed for accuracy. They are getting worse, and they are slowing.

COL BELENKY: The interesting thing about throughput is that you get a function of both. It is a way of representing speed-accuracy changes and sometimes differences are more in sleep deprivation. Differences are more dramatic if you use a throughput measure speed-accuracy product. In other words, you take the number of correct responses and the time that was available to make a response shorter in the time the machine rewrote the screen, and you subtract for that time out. That is quite interesting. Is there any overall correlation between core temperature changes and improving in performance over the session?

DR. THOMAS: No, not really. Core temperature changes is not one of my favorite indices.

COL BELENKY: How are you measuring?

DR. THOMAS: In this particular one it was measured with rectal probes which produces a lot of uncertainty. It is too variable.

COL BELENKY: The reason I am interested is because obviously in sleep deprivation you see temperature decline with progressive sleep deprivation. Temperature goes down systematically, and when you get caffeine or amphetamine temperature goes back up. It has been very nicely correlated with performance and metabolism. That is interesting. How do you explain this apparent gender difference?

DR. THOMAS: I don't.

MAJ SUTTON: How were the women selected?

DR. THOMAS: These are enlisted people who were available during that time.

MAJ SUTTON: So, these were male Seals?

DR. THOMAS: No, I am sorry. In this particular study, which was done locally at Navy Medical Research Institute, we used enlisted people who primarily work in the building or in the hospital. Those were volunteers.

MAJ SUTTON: What was their military training?

DR. THOMAS: These are not people who were trained to operate in the cold. These subjects are quite different than all the other data I showed you up to that point. These are primarily from people who work in the Navy Medical Research Institute or in the hospital.

MAJ SUTTON: The amount of training was controlled for, as well as time in service?

DR. THOMAS: No, there was no control for time in service. The only thing that was controlled for is the number of sessions that they had for baseline training. We usually require people to do about eight or nine baseline sessions before presenting manipulation. This is true in the lab or out in the field to get a good stable baseline for each individual. They were all trained to that same level. Other than that, there was no attempt to match.

COL BELENKY: What about age for the two groups?

DR. THOMAS: That is a good question. This study is now 2 years old so I have to reflect back on it. They are probably about the same general ages. They came out of the same population, very few senior people, mostly junior people.

MAJ SUTTON: No officers?

DR. THOMAS: No.

MAJ SUTTON: Was it a volunteer clinic?

DR. THOMAS: They were volunteers. They were individuals who responded to advertisements put up around the campus for monetary incentive.

DR. GABBAY: Do you know anything in general about your different tests and gender differences in performance in the general population?

DR. THOMAS: Not at all. It is not my area of expertise.

COL BELENKY: We don't see any performance differences between men and women in sleep deprivation. We are lumping rather than splitting. We are gender blind as far as recruitment goes. We just recruit test subjects and whoever comes along we run.

DR. GABBAY: Does that lack of gender difference extend not only to the sleep deprivation effects but to the drug trials where you referred to caffeine and amphetamines?

COL BELENKY: Those are done in males. We have not run women in stimulant studies. Those studies were done several years ago. What we have done on men and women is our positron emission tomography studies of sleep and our studies of flumazenil reversing triazolam and zolpidem-induced sleep. Now, we are doing studies of flumazenil alone in sleep deprivation to see if it has alerting, awakening, performance enhancing or sustaining effects. We are going to break the code in 3 weeks.

Other work suggests now that there really isn't a gender difference. It used to be thought that women actually were a little bit better than men at sustained performance in sleep deprivation but that is now no longer the case and people think it is a wash, basically. Everybody's performance degrades at pretty much the same rate. The obvious thing to link between cold studies and sleep deprivation would be temperature effects. Our positron emission tomography study showed that brain metabolism overall declines with progressive sleep loss.

We relate metabolism and temperature and crudely think that they are all aggregated and correlated. That is not to say that we don't see specific changes in sleep deprivation. We do, and that is primarily prefrontal, interior parietal and thalamus; the exact sort of areas that are involved in complex task performance on any complex task, regardless of its nature. Again, we are lumpers rather than splitters and we think that everything is affected. We are not of the school that believes you can tease out different aspects of cognitive performance with different tests except if you really simplify things and get a reaction time test versus something with a cognitive load. Once you get a cognitive load it is pretty much the same brain areas. The brain activation studies suggest the same brain areas are activated regardless.

MAJ SUTTON: I am interested in both of your comments on this Ranger tragedy. One of the things I wonder about in terms of the Ranger instructors is are they rotated in and out of the cold to preserve their ability to function cognitively in these extreme environments?

DR. THOMAS: The trainers?

MAJ SUTTON: The trainers.

DR. THOMAS: It tends to be a pyramid structure where individuals who are the trainers working with a particular platoon or a particular group of people probably will only work with them for a few days at a time.

MAJ SUTTON: With the recent tragedy with the four Rangers who died of hypothermia, to what extent were the Ranger instructors themselves perhaps subjected to the same hypothermic stresses?

DR. THOMAS: I have no idea. I am not privy to the particulars of that. I know that in Seal operational training scenarios the trainers are right out there with them. They do rotate them. If they are out for 7 days, you may not have all the trainers out there for 7 days. If it is a 1-day or 2-day operation they will be there all the time and are subject to the same kinds of thermal environmental stresses.

COL BELENKY: The Rangers clearly violated their own guidelines; the body temperature was lower than acceptable; the water was deeper than acceptable; and why they didn't process those things and do something sooner, I don't know. The water was 54 degrees and it was chest and neck deep.

DR. THOMAS: We have some individuals who have done cold climatization studies in our lab and found for 54 degrees or 55 degrees that one-half hour or 45 minutes is about max.

COL BELENKY: Right. They clearly were outside the envelope. That became very immediately apparent as they had the first couple of casualties. They got out of there, and then everybody else was stuck. The fact that they actually misplaced someone and then found him dead is almost worse than the other mistakes.

MAJ SUTTON: It seems like possibly this kind of research could be very informative on the experiential level for some of these operators who go out under controlled conditions to see just how performance is decremented. I don't know if your research gets implemented on a wide-scale basis with these people, but I wonder if it might be a good training aid, as well as a scientific endeavor.

DR. THOMAS: In our area with the Special Operations community, it is beginning to happen. As we have worked with each new group and particular trainers see the advantages of getting standardized quantifiable measures, it is doing that. That process is evolving. Not only is there the tasking from the top down to have these kind of measures for people to be able to compare, there is also the realization by the training community and the medical community of the practical utilization or the sense of being able to put a number on how bad is it.

DR. GABBAY: Aside from performance decrements, what are some of the other effects of prolonged exposure to cold or repeated exposure?

DR. THOMAS: Aside from cognitive kinds of things there really isn't a whole range. What you will find is, because it is primarily a catecholamine-driven system, that people who have prolonged exposures will suffer from acute hypertension because of the pressure effects that are going on. Most of the time you will not see too many real physiological effects. You will see changes in the ability to grip. We can measure grip strength in the hand; mobility begins to change.

DR. GABBAY: What about mood states, irritability, and things like that?

DR. THOMAS: If you give people a mood scale where you have something that is like a cold scale that is part of the overt stress scale that relates to formal environments and you say, "Tell me how on this five-point scale how cold you felt over the last hour?" it is not surprising to find that people who have been out in the cold will say, "I feel a whole lot colder now than I did then. I feel meaner. I feel angrier. I feel more hostile."

MAJ SUTTON: Is there a point, then, short of coma where they lose their awareness of their physiological state?

DR. THOMAS: Yes. One of the concerns about the cold-induced amnesia is that they momentarily forget things; the "where are my keys?" phenomenon. That can just as easily be, "I just checked myself, and I see I am beginning to get symptoms of hypothermia here. I had better do something about it. I just forgot about that, and I am busy doing something else." That can happen quite early on. As core temperature begins to fall a couple of degrees you really enter the beginning of hypothermia. You can easily become so impaired that you are incapable of functioning.

MAJ SUTTON: Do you see similar trends on the other end of the scale in terms of hyperthermia as far as the cognitive decrement?

DR. THOMAS: Our lab has done very little research with the warm end of the scale. That which we have done suggests that it may be more a heat-humidity interaction that begins to produce cognitive impairments. In a study we did during this recent Persian Gulf venture, we found evidence that you begin to see cognitive impairments on matching to sample memory without any real significant core increases.

COL BELENKY: We see the same thing. We have this temperature system developed. It is very nice. You swallow it. It has a little transmitter, and you get away from having to use either tympanic or rectal probes. It is a real advantage to wear a little belt device and a little radio telemetry transmitter sends a signal out to the belt device. It is very non-invasive as far as the subject is concerned. The pill just travels through the GI tract and you know you have lost your pill when it starts registering ambient; or as Groucho Marks said, "Either this man is dead or my watch has stopped." I mean you worry when the pill starts tracking ambient.

DR. THOMAS: That is a far superior method that probably should become standardized. Rectal temperature is the wrong end of the body if you are interested in cognitive kinds of things. The brain is up here. Tympanic has been shown to be influenced by so many things like the temperature on the other side of your face. It doesn't instill great confidence that you are measuring something in the brain.

COL BELENKY: What I am really saying is that our system is available for research purposes, and it is a nice system.

DR. THOMAS: It is a little pill you swallow that has a radio transmitter?

COL BELENKY: It is like a big vitamin. Little is probably not correct. It is a horse pill. You swallow it, and you have a little belt-worn receiver about the size of a Walkman. It picks up the signal and quotes the data. We developed the system to monitor safety in chemical MOPP (Mission Oriented Protective Posture) gear exercises so that people could be out running around freely in the field environment. Basically, at the same time we could keep track of a platoon's temperature and know whose temperature was whose. It is multiplexed and encoded, and you can pick out the signals and know who is who and what is what, and what each person's temperature is. It is continuous, basically. You get a temperature readout every 30 seconds; it is a nice continuous variable.

DR. THOMAS: How far away do you receive it?

COL BELENKY: I am not exactly sure, but it is about a quarter of a mile, something like that.

MAJ SUTTON: How long does it transmit reliable data?

COL BELENKY: It will do it until --

MAJ SUTTON: Until you void it?

COL BELENKY: Yes, because the battery will last long enough. They are not that expensive anymore. I am not sure what the cost is, but it is not that expensive. It is really quite doable in a field study. We are working to make it into a turnkey system so that you could just use it without having to tinker and patch wires.

DR. GABBAY: Maybe both of you could address some issues for us non-operations types. You said that you went out in the field for a year to get a sense of what the critical abilities were. What kinds of tasks are these people actually doing? I realize that is kind of a broad-ranging question.

DR. THOMAS: The categories probably broke down to maybe 50 or 60 different areas. They range from patroling for an hour to long patrols, short patrols, patrols in cold, patrols in heat, through medical interventions and radio communications where people have to be very bright about what they are sending and what they are receiving. The categories included very physical kinds of things like combat swimming, combat swimming with specialized gear on, operating STV submersible vessels, operating high-speed boats on the surface; a wide range of activities most of which involve that list of things that require vigilance and attention. The surprise to me was to find how much the real operators in the field attributed to cognitive behavior as opposed to the ability to push and pull.

COL BELENKY: Let me underscore that. That really is the issue and is becoming more and more the issue. There are very few jobs in the Army that don't involve a lot of cognitive work. We identified one; that is the soldier who carries the shells from the trailer to the Howitzer. He doesn't have to think, but everybody else does. Literally everybody else does, and the physical size and upper body strength is counting for less and less. What is relevant in mechanized or armored operations, for example, may not be relevant in other operational environments. Where is the heavy lifting in a cruise missile command center? There isn't any. What about in AWACS (Airborne Warning and Control System)? These environments are operational environments, but they are increasingly virtualized in the sense that nobody looks out the windows anymore. It is all a virtual environment and often a very controlled environment; often as controlled as anything you find in the laboratory. In fact, if you look at our laboratory these other jobs are probably more climate controlled.

There is this cognitive component; there is vigilance. It is intelligence applied and focused in different areas but it is all the same functioning. On the other hand, I think what is absolutely true is that more and more the infantryman's problem is that he is a maneuver unit just like a corps, division or brigade. He is the smallest maneuver element, but he has the same tactical problem as the corps commander. He has to understand the ground. He has to maneuver in relationship to other maneuver elements.

The cognitive load is huge and always has been in combat operations when there has been any sort of decentralization, dispersion and maneuver. If you are in a Greek phalanx and all linked up maybe there is not as much of a cognitive load. If you are doing firing by the numbers with the old muskets (that is where the expression came from because they had a series of 14 steps you had to go through) you do it by the numbers. Put the powder in, do this, do that, and so on. Once you get into modern combat where there is skirmishing and maneuvering you have a high cognitive load. If you are in a vehicle, then the people with the high cognitive load are the vehicle commanders. For example, in a Bradley fighting vehicle, that would be the commander and gunner. This is also true for tanks for the commander and the gunner because they trade off and they have commanders looking around and identifying targets. They pass it to the gunner who then confirms. The driver and the loader have less cognitive load, but the real way to look at it is where is the element of maneuver? Where the person or the unit is maneuvering in relationship to other units to deliver fire to maximum effect on some common object, there you have a high cognitive load.

MAJ SUTTON: It seems that, if cognitive performance could all be lumped together, you wouldn't get these kinds of differences. How do you explain the differences here in reaction time, reasoning and acquisition versus no differences in vigilance and calculation?

COL BELENKY: I would say that is probably more an artifact of the test than it is of what is required of somebody in an operational environment. In other words, I think operationally you are not going to see this sort of degradation in some parts of your operational skills and not in others. I think these are artificial. They are overall good reflections of performance, but I think they artificially piece apart. The only real distinction for me is reaction time versus something where you have to process information; you know, is it there or not? We control our serialized track test with reaction time which involves keying single digit numbers. You basically just have to look at the screen for E and 4 as opposed to seeing two numbers, having to subtract one from the other and then key in the key answer.

DR. THOMAS: It does get to be a complex issue. One always has to be aware of the measuring instrument and what you are measuring. There is no doubt that the tasks we are using have arbitrary parameters like intervals between stimuli and requirements for the reaction time. One could spend a lifetime doing a master's thesis on manipulating those kinds of things.

COL BELENKY: It is basically that level of work. In the calculations test, for example, I would be interested to see speed, as well. I believe a lot of the apparent contradictions fall out when you look at speed and accuracy. Things take on even more common aspects because people will preserve speed while accuracy in and of itself is very fleeting. If they are doing half the number or they are taking twice as long to do everything, they are generating half the amount of useful work. In fact, a small decrease in accuracy, if that is how you look at it, may mask. You really have to look at both speed and accuracy.

DR. THOMAS: For the serial add and subtract in the cold there is no difference either way for accuracy or speed.

COL BELENKY: They both decline?

DR. THOMAS: No, they don't decline. That is one of the ones that doesn't. Serialized subtraction doesn't seem to be affected by cold.

DR. GABBAY: Let me ask a big picture sort of question, extending what was said about the lessening importance of physical strength and the increasing importance of cognitive performance. Gender differences aside, we can assume that for any of these tasks or one overall ability, we are going to have a distribution of abilities. Jim Vogel is busy developing physical strength standards for each Army position, and I am wondering if you foresee anything like that? What about matching cognitive abilities to tasks? I assume that even if there is no acknowledgement that that happens it must go on at some level or you would get people in jobs that they cannot handle. I am wondering how these assessments are made.

COL BELENKY: The Israelis have done a lot of work with personality variables, ability variables and just plain intelligence. Intelligence predicts practically everything much better than anything else. It predicts whether you are going to be a hero or not. It predicts your resistance to combat stress. It predicts how likely you are to become a non-commissioned officer (NCO) and officer. Actually, the predictors are intelligence and peer ratings; there are really four things that go into it, but they are somewhat related. Motivation is assessed on interview, peer ratings through courses, intelligence is measured by a standard IQ test and educational achievement is measured by math achievement which very nicely correlates with educational achievement in general. You have those four measures and you have a lot of information. If you had to pick just one, math achievement would probably go a long way to predict success in cognitive specialties.

The Israelis figure you need intelligent people in all of the armed services branches. In the initial screening of recruits they assess these areas; they take the motivation, and the educational achievement and then distribute the high scorers evenly throughout all of the combat arms so that that they have a cadre from which they can presumably draw their NCO's and officers. They don't see it as this business of matching by finding somebody who is particularly talented to watch an AWACS screen. I think this is probably misleading. It is not that it takes a lot of time and funding for it and so on. In that sense there are some advantages, but whether it means anything, I don't think so. The demands in combat are pretty broad and aren't just sort of one station in an assembly line. Everybody is doing a lot of different things. I think there may be some people with a special order of intelligence. Brilliant field tactical commanders may have some mental wiring differences from the rest of us.

Alexander the Great was never at a loss for innovative and brilliant tactical solutions to whatever problems faced him, but he was a genius. Most people aren't. Mozart was a genius. Most people aren't. You are not going to be able to run your army by selecting for these special individuals.

In general, you can look at the selection of fighter pilots. Fighter pilots have an IQ between 120 and 140. They are superior and well-adjusted in general. Race car drivers in the same way tend to be pretty well adjusted and do very well on psychological profile tests. It is those sorts of people; basically bright, well-adjusted, motivated people who have a good education. They are the people you want and you want to distribute them evenly throughout.

MAJ SUTTON: In terms of the enlisted people, don't you need a certain general test cutoff score to go into certain fields?

COL BELENKY: I really believe there is, but the point is it is general. They don't have a specific task that selects people who are going to be good at being medics. You have a test that shows certain people are bright, and then they say, "Okay, you would make a good medic." You could find, if you look at the literature, small gender differences. In large populations, you will find small differences in verbal and spatial ability with men scoring slightly better on spatial ability, women slightly better on verbal ability. These are small differences, with a huge overlap in population. I am sure you can find some ethnic groups taller on the average than other groups, but you wouldn't necessarily select your basketball team only from the tall ethnic group of people because there are a lot of short people in that group, too. This is sort of getting a little bit far afield, but the advantage that I see in terms of the convergence of simulated tests versus real operational environments in trying to predict performance on the basis of some subset of tests can go out the window. You can actually constitute a team, put it in a very realistic simulation of the real thing and see how the team does and form platoons that way. Then you can be gender and practically everything else blind and those people who have the interest and the ability will do well. Those who don't, don't, and then you can finesse the whole issue.

MAJ SUTTON: Do you think the Army will ever move to the point where it is fully gender indifferent?

COL BELENKY: That is a political decision. The Army may very well move to a point where it is gender indifferent. I would guess that would be the case.

MAJ SUTTON: Right now, we are behind in the Air Force and the Navy.

DR. THOMAS: You have to think about the Army as the most egalitarian of the services, right? The Air Force is not very egalitarian. You have the pilots, and you have everybody else. The Navy, of course, is quite different culturally. I think what you are going to see is that the services in general will be gender indifferent. Then I think you are going to go on individual choice and interest. Based on personal selection, I think you are going to see fewer women volunteering for combat arms than men. Whether that is cultural, biological or some amazing mix of the two, I really don't know. Basically, the best people will be allowed to self-select because of the nature of the system; the system will select the best people. I think that is fine. I don't see this problem. I don't think there is any sort of a mystical thing about being a man that makes you get up in the air and bomb, you know. I don't think that is the case.

If you look at the environment, gender differences may be relevant when you have a squad of infantrymen. When you are talking about an AWACS, a Bradley, or an M1, male bonding issues may be far less important because it is a much more structured task environment. People will be accepted there based on their ability. Personality doesn't matter much but the people who are successful are the ones who have specific skills and talent; a skill that contributes to the group. If you can cook it doesn't matter whether you are a man or woman; your personality or temperament, whether you are a nice person or not is less important. I would suggest those sorts of issues of skill and competence are more the issue than anything else.

I think the Navy had a lot of bad press. Now, they are working hard to have the right appearance. I would say that relative to the Navy the Army is probably more gender blind. With the Air Force, given the nature of the jobs they have, all the evidence suggests that women and men both do very well. Bright, capable people do well in those environments.

MAJ SUTTON: Back to the work you have been doing, what effect does hydration have on people's ability to perform in cold environments?

DR. THOMAS: A lot.

MAJ SUTTON: How do you control for that or how do you address that issue in the work that you do?

DR. THOMAS: Most of the research we do occurs during training operations where people are being watched very carefully. There is an understanding that people will hydrate themselves in the cold as they have been taught to. Occasionally they won't, and they learn their lesson in the field.

COL BELENKY: Could subtle differences in hydration account for this apparent gender difference?

DR. THOMAS: That was done in a laboratory under much more controlled conditions for only an hour or so. Actually, some of the performance decrements we have seen out in the field certainly do relate to hydration. They, also, relate to individuals who are not very compliant in more ways than not hydrating themselves. Individuals who are susceptible to tremendous performance impairments may be the same individuals who are susceptible to not following orders.

MAJ SUTTON: I am wondering, also, if you were testing a group over time in a cold environment and they were exposed to the elements on a continual basis, how do you account for impaired sleep and its effects on their cognitive performance in the cold? Is that an area that you have been involved with?

DR. THOMAS: Most of the studies that we have done out in the field are rather acute, that is they are on the order of less than a day in terms of exposure. We do keep very close tabs on physiological measurements. We get measures of hydration. We know what their input and their output is. We take blood samples to know what is going on. When you get to multiple-day operations, then you get to multiple-day stresses which are not only the cold; they are other interactions with sleep deprivation and general fatigue and tiredness. If that certainly is the case, then there is nothing to do at this point other than say, "That is the case." I don't think it is very complex, but you have to put something at the top of the paper or the report. There is nothing wrong with that.

DR. GABBAY: We have about 10 minutes left. I wonder if we could get a performance assessment done.

DR. THOMAS: Sure. The first task is the one that is called "Matching the Sample" which is to measure memory. When they see the word "ready" at the top, they will press the down arrow, and that will produce the checkerboard matrix that is on the screen for 2 seconds. Then there is a delay, and you get two back, one of which is exactly the same as the one we saw, and the other one differs by a cell or two. It is clearly obvious which one it is.

I am looking at it from the side. So, I wouldn't know. Then there are about four or five trials here that give you a feel for this. During the demonstration, which everybody does before they actually start the baseline, there is feedback that they are correct or not correct. We do not give them feedback during the studies themselves. I think Dave tends to do that, doesn't he?

COL BELENKY: Exactly, right, feedback during training and then no feedback during testing.

DR. THOMAS: Which one is it?

PARTICIPANT: That one.

DR. THOMAS: Good guess. This will probably be the last one. In the real tasking the delay in between is anywhere between 2 seconds and 16 seconds. You have to remember what you saw for a longer period of time. This is the demonstration here; it is about 2 seconds.

DR. GABBAY: Do you ever vary the duration of the initial presentation?

DR. THOMAS: We did a lot of that early on. What we found is having it on the screen for 2 seconds is an operable condition to command people's attention on the screen. So, they keep watching it and moving ahead.

The second one of the six is a measure of reaction time. The way this works is on the screen you are going to see four squares, and there is a little red square in the middle of one of them. That maps onto how the arrow keys are laid out. The object is to press the key that relates to where the square is. If you press the wrong one, it will give you a little beep. The real task goes on for several minutes. In the cold, we found that the rate at which they do that doesn't change. What does change is that they tend to get out of sequence. They tend not to match it as well.

This one is the third one which is the addition/subtraction. It is simply 4 minus 8 would be minus 4. This is the one some people have a lot of trouble with because they subtract it from 10, and so, the single digit they put in is 6. There are several examples of this. If the answer is a two-digit answer, they always put in the least significant digit; 7 and 5 is 12 so they would put in the 2.

All of the screens are timed so that if somebody falls asleep at the wheel under a drug or a tired condition they won't get hung up on one screen. During the demonstration it gives them feedback on the right answer. If they are wrong they get a beep and can then look to see the right answer.

COL BELENKY: The one difference in our serial add and subtract is we show the numbers. We show the first number and second number and then the operator in sequence. Actually you have to remember the first number.

DR. THOMAS: So, you have memory.

COL BELENKY: Right. There is the memory component.

DR. THOMAS: Each thing appears at 250 milliseconds. There is a 500-millisecond pause with a 7, then 5, then minus.

The fourth test is vigilance where letters and numbers appear on the screen one at a time. The object is to look for an A or a 3, and when you see an A or a 3 to respond. In the real task, this goes on for several hundred presentations which takes 5 or 10 minutes or so. This is one which is not affected by cold or at least as we have done it, which kind of surprised me.

The next to the last one is the grammatical reasoning test. In this one you always see the letters A and B and a statement about it which could be, B is not followed by A. We put in true or false. B is not followed by A is true. A is not preceded by B. B is followed by A which is one I can do. A follows B. That is obviously false. A is not followed by B. What is the answer? A is not followed by B is true. No, it is not, okay. A does not precede B. That is false. A is not preceded by B.

The last one is related to acquiring information or learning. The machine has generated a sequence of 12 key presses all on these arrow keys that could be left, left, up, down, right, left, and the object is to learn what that is or to crack the code, as they say. As you get each one correct, it will fill this in with yellow. So, 1/12 of this will get filled in with each correct response.

You have no idea what the first thing is. You can randomly know the first one of the 12 is not right. The very first one is down. What you have to remember is down. Then it is down. No, it is not down, up. It is not down, right. It is down, left. Down, left, down, left, up, down, left, right, up, down, left, right. You have to work your way through it to get that. As you begin to learn it, it goes around, left, right, and clockwise.

DR. GABBAY: You are saying that the effect of cold on that is they acquire it at the same speed?

DR. THOMAS: Not necessarily the same speed. What happens is they get on top of it. They start to get the sequence like I have now. They have gone through it, and then they will lose it. They will get back on top of it again, and then they might lose it again, rather than just holding all the arrows down across the board. This is a very easy one. That is all. It takes about eight or nine sessions of practice for people to become familiar with this and get a good feel for it. It usually takes about 15 or 20 minutes to go through the whole process. People doing operations can easily stop for 15 or 20 minutes to do this. It doesn't interfere with them. It seems to be long, but it is something that is acceptable in the military workplace, even a very stressful workplace.

DR. GABBAY: Did you say that you were using this, also, to aid in the development of equipment and uniforms?

DR. THOMAS: This is going is to help give people a standard yardstick to be able to measure performance. The ultimate final common path about how well a military operation or a mission is accomplished is how well people perform. If they are interested in comparing thermal protection garments in different cold water swimming operations, the real interest may be in coming up with the best garment; this one is better than that one. The concern and the interest would be to use a tool like this to help answer that question. You would have an objective, quantifiable yardstick to use rather than just somebody's idea about I like this one because of what people in California do or I like the color of it.

DR. GABBAY: Presumably they could use it. To the extent that they have flexibility they could define the parameters of the task; when people would get breaks, how long they would be working without a break and so on?

DR. THOMAS: They could do that. A lot of trainers in the Special Operations world, particularly the Navy Seal community, have begun to come up with ideas about how they could use this in many interesting, nice and sometimes insidious fashions in terms of how they could restructure training and daily schedules for people.

COL BELENKY: We did a nice modeling on heat stress. Natick has a model where they suggest that the idea is to work until your core temperature starts to rise and then back off, rest and let it go down. In hot, humid environments your ability to radiate heat is poor. It takes a long time for your core temperature to go back down. We based the model on what happens if you never get your core temperature up. You work slowly and you turn out to get more done without taking breaks. The Natick approach of working and breaking turned out to be less efficient overall than a steady, slow pace of work which is what people in hot countries tend to do. It was very interesting actually, and the modeling can play a very important role once you have some parameters and know how performance degrades. You can model different fixes and see what has the greatest payoff.

DR. THOMAS: Absolutely.

DR. GABBAY: Thank you very much for giving your time.

Disasters and Social Support

Fran H. Norris, Ph.D.

We're very pleased to have Fran Norris with us this morning. Fran is an Associate Professor at Georgia State University and is also the Director of the Community Psychology Program. I wanted to comment about Fran's background as I know it because I think it is very impressive. Having now listened to disaster and trauma researchers over many years, I have always been impressed with Fran's ability to target the most important question and to do it with elegant methodologic rigor. It is an area that's difficult to do research in and it takes a thoughtful person to be able to generate ideas and at the same time do it in ways that make them empirically investigatable. Most recent is the study she is involved in of Hurricane Andrew on both the social and cultural elements predictive of disaster recovery. Today she's going to talk to us a bit about disasters and social supports which I know has been a long term area of her interest. We are pleased to have you with us, Fran. Perhaps it would be helpful if people went around and introduced themselves. It's a relatively informal group.

DR. CARDEÑA: Etzel Cardeña, Department of Psychiatry.

DR. NORRIS: We've been discussing the dissociative processes.

DR. NORWOOD: I'm Ann Norwood, a psychiatrist in the Department of Psychiatry.

DR. MARLOWE: David Marlowe, Chief of the Department of Military Psychiatry at the Walter Reed Army Institute of Research (WRAIR).

DR. FULLERTON: Carol Fullerton, it's good to see you.

DR. SINGER: Jerry Singer, I'm a psychologist here.

MS. LEVINSON: Cathy Levinson, I am a clinical social worker.

DR. SLUSARCICK: I'm Anita Slusarcick, I'm with USUHS Psychiatry and I'm a psychologist.

DR. NORRIS: Well thank you all for coming. It's really a pleasure to be here. I'm going to start with some slides from Hurricane Andrew. Then I'm going to actually back up and go to some previous studies for a while and work my way back here. I think for those of you who aren't in the area of disaster research, these slides will capture fairly quickly the phenomenon we're talking about and that people are coping with. When we went down the first time to start our research on Hurricane Andrew it was already January of '93. The disaster occurred in August of '92, so keep that in mind when you're looking at the slides, that these are actually four months after the Hurricane struck. I think they illustrate a few things broadly. I will discuss those first and then I will get back to talking more about some of the data.

Probably one of my favorite presentations that I ever watched involved a couple of students who actually put all these slides together and did a presentation for a non-disaster, informal student conference. The story of Hurricane Andrew was told through graffiti, which was really a great talk. This is a very short version of that. Most of the slides will be at the beginning, and there will be a few later on.

This is just a typical street in Homestead four months after Hurricane Andrew. You can see the debris piles everywhere. It wasn't always easy to find your way around. We stayed in a hotel right in Homestead which we were fortunate to find because rooms were not plentiful. We couldn't find a place at first. The first thing we did was say something to the person at the front desk about how we couldn't find the place, "you don't have a sign." She looked at us like she was wondering, "where are you from." We didn't have a telephone, we didn't have a bathtub and they had just opened up. It was very basic living conditions, but it served our purpose. Basically, what we did down there was tour around the neighborhoods. We were trying to select neighborhoods that represented a good cross section both of levels of damage and of different population groups. We were particularly interested in having equal representation of whites, blacks and Latinos in the study. So that was one of the main things we were looking for.

These first few slides should give you a sense of the level of damage and debris that people were dealing with all the time. There were no street signs anywhere, which was one of the most striking things to us. Even finding our way around with maps, we started looking for things like road markers because there were no street signs.

This is me and three of our students. We were actually looking around. This is Veronga Lakes which is leveled now. Last time I was down there, which was just a couple months ago, this whole area was just gone. It's really kind of creepy. You drive through this area and it's just pavement now. There were trailers everywhere. This was the main way people were living at this point. People had basically rented trailers. They parked them in their former front yards and were living in them. Because the backlog of home repairs was months down the road, very few people were actually back in their prior living conditions.

This intrigued us so much we had to stop and take a picture of it because it showed the force of the storm I think in some ways as well as anything else. This was a heavy metal pole that had been completely twisted over on its side.

The second day we were there it rained just a little bit. Everything was still so clogged that the slightest bit of rain would cause a flood through the streets. There were streets we couldn't get through that second day after just a light rain. One of the things that you start noticing right away was that people were writing their addresses and names and insurance companies on their homes. It was striking. You would drive down the street and everyone was doing that. Of course, it made sense. There were no house numbers or street signs. It became a new cultural way of saying who you were. They put their own names, (this one happened to say Norris -- why do you think I took that slide?) and Allstate; that was prevalent all over the place.

The best living conditions we saw were in the trailer camps which apparently was the place to be. They were very neat, very clean, if somewhat lacking in aesthetic value.

One of the things that was also striking was, once you start spray painting your house, you have some fun with it, I guess. People started writing messages on them as well. That was one of the first things that intrigued us; capturing some of these messages and what people were saying with them. One common strategy was to find some humor in it. This one says, "Prudential, I want a piece of the rock." Some of these are actually quite creative. "A room with a view." "My house has fallen and it can't get up." "This is totalled, mom." "Welcome, open house." "Thanks Andy, I needed that." "We're going to Disney World, but we will be back." My personal favorite was, "I always wanted to spray paint my door."

It was really quite remarkable. There were also signs of people witnessing survival, making these statements in great big letters. We saw this frequently. Some trying to say something very positive and I really almost think of it as a witnessing act. It was definitely some kind of coping behavior. This one saying, "We are okay." An artist here, very much saying "We survived."

Now, you might imagine there also were expressions that weren't so positive and happy but with lots of anger. This one is a particularly nasty one. I don't know how clearly you can read this from where you are, but on this door it says, "Kiss my butt." Here it says, "Andrew, you -----." "We hate Andrew." These are not happy people. "Andy, up yours." There's this whole neighborhood that blew down which was brand new that was built by a builder who recently moved into the Atlanta area. No, I'm not going to buy one of his houses. It was completely demolished while a neighborhood right next to it was fine. Maybe this was the hurricane or maybe this was something else. The residents felt it had to do with the way they were built. Their attribution was this whole thing was the builder's fault.

You will like this one I bet. "Government bureaucrats will do me more damage than Andrew."

The other thing that was particularly overwhelming was all the fear; whether it's fear of crime or beyond fear of crime into these threats and conflicts and statements. "Last chance, keep out." "You enter, you die." "I shoot to kill." This was an upper middle class neighborhood we went into and literally when we entered the neighborhood I wanted to turn around and leave. I was scared to death the whole time we were driving around in our car that someone would decide we didn't belong there. "Keep out, we'll shoot." "Since the police can't stop you, anyone caught inside will be shot on sight." "Enter at your own risk." "I kill looters." "We believe in God, but I will shoot if you loot." "Looters will die."

Then there was also a bit more humor. This was another neighborhood that was called American Homes. "Andrew 1, American Homes 0". "Looters will be castrated." Then some of them were sad. That's kind of how I took them, really kind of expressing some sadness. Saga Bay was a really interesting neighborhood, right on the coast. It will probably never come back because it was another situation where we find that this whole area of natural versus technological disasters, which people used to make a lot of distinctions between, is probably waning. This was a neighborhood that actually had been built below sea level. The stories were essentially that someone had paid off someone somewhere and that's why this was allowed to happen. Consequently, the insurance companies refused to pay for the damage. All these people were pretty much left completely with nothing and no way to retrieve what they had.

"This used to be home." "Allstate, how about a hand?" The few slides I'm ending with deal more with starting to move into the area of asking for help and social support. "We need help, George." "Prudential, help." This was kind of a poignant one, which was probably done for its effect, but it's, "Help my babies, please."

Which brings us to social support in natural disasters which I'm mainly going to talk about today. Chris has been my main colleague throughout all of this research dating back to our first study in Kentucky. He's a brilliant young man and likes to read. He has read everything I think that's ever been written on social support.

The three studies that I'm going to be talking about date back to the first one we did in Kentucky. Of the three studies, it probably had the best design. It was by accident rather than planning, unless you consider just knowing an opportunity when you see it planning. Essentially, I had been working at the time on a panel study of older adult mental health. I was actually in graduate school at the time. We came to notice that a major flood had occurred in eastern Kentucky, which is an area that's usually referred to as Appalachia. It's an interesting area of Kentucky with a very low educational level and an interesting dynamic of its own. This flood occurred between first and second waves of the panel, and therefore we had the opportunity of having both some pre-event measures on disaster victims as well as measures taken after the fact; at 3 months, 9 months, 15 months and 21 months after the event.

That flood occurred in 1981. The sample here is actually kind of small. I will tell you more about it later, but it's about 200 older adults. They were practically all white and of low socio-economic status, which is consistent with the population of that region.

Hurricane Hugo was a little bit more by design. By now, I was totally intrigued by the area of disaster research and decided this was definitely where I wanted to head. In Hurricane Hugo, we drew a fairly large sample. We used a quota sampling strategy, these were in-home interviews. Actually, in all three of these studies we used in-home interviews. We used a quota sampling strategy so that we had equal numbers of blacks and whites, males and females and young middle-aged and older adults in the sample.

We interviewed in four different cities that were selected because of the differences in the nature of the way they experienced the hurricane. Charleston is the area that most of you had probably heard about. They received lots of damage in Charleston. So did Charlotte, North Carolina. The interesting aspect of that was hurricanes don't usually go to Charlotte, North Carolina and it certainly caught them completely by surprise. They were awakened in the middle of the night as trees fell into their homes. Savannah, Georgia was not actually struck, but it was one of the places that might have been struck. I have this great picture, I wish I had a slide of it, that came out in the newspaper the day before Hurricane Hugo struck when the headline read, "Hugo to strike U.S. coast, but where?" Savannah is a small city and they evacuated 90,000 people. I guess that's called a near miss. Then they all got to go home. We included Greenville, South Carolina because they were neither threatened nor struck by the hurricane. They were our control group. We interviewed them at months 12, 18 and 24.

Hurricane Andrew is the most recent. We interviewed 400 adults using a similar sampling strategy as in Hugo, except this time we also included a sizeable number of Latinos; one-third of the sample was Latino, one-third black and one-third white. It was all in southern Dade County which is really kind of greater Miami.

In both the other two studies we had non-victims. We really didn't have that in Hurricane Hugo. In part that was because this was funded by a rapid grant, through NIMH (National Institues of Mental Health), which I love. On the other hand, they're fairly small and you've got to use every dollar for its maximum impact. We did 400 in-home interviews out of that, plus a pretest we had to do. I have since received additional funding and we reinterviewed about 60% (I've forgotten the exact numbers) of these 400 adults two years post-event. I haven't even entered that into the computer yet, so I have no findings from that. These were extremely difficult people to track down. As compared to Hurricane Hugo, our follow-up rate was about 90% each time. These are people in very stable communities who are very easy to find. In southern Florida, they are just on the go, highly transient. Some of them weren't even necessarily legal. It was very difficult to track people. I was not terribly happy with only a 60% response rate, but it seemed to be the best we could do. That was after months. We finally just gave up. Are there any questions so far?

DR. FULLERTON: In your graffiti slides, the only slide I saw any people in was the one with people on the roof. When you were cruising around, were there any people around?

DR. NORRIS: There were some, but one day it was raining. There just weren't very many people outside. The next day there were a lot of people out working. Yes, we did see some people. Partly, we were trying to be as unobtrusive as we could. When we came by houses where people were obviously there and seeing us, we didn't want to stop and take a picture. It was mainly when it looked like we could do it without being too intrusive. That was the main reason.

DR. FULLERTON: Especially given the graffiti saying, "shoot to kill."

DR. CARDEÑA: I also have a question. Are you going to comment at all about how you gained entry to the different communities? How you obtained permission, if you needed to in different studies and how you introduced yourself to the people?

DR. NORRIS: Yes. It wasn't that hard to do. We basically used local interviewers as our agents. In south Florida for example, we worked with a small survey research company which specializes in research with Latinos. They had a pool of experienced interviewers on hand, most of whom were college students at Miami. We essentially gave them specific neighborhoods to target, with the instructions of finding residents in those neighborhoods to interview according to those quotas. We didn't attempt to do probability sampling, because I don't know how you would do it. If someone could tell me in that kind of study, I would be glad to, but we just couldn't figure out how to do it.

We didn't find it to be hard. For the most part, our response rates in both Hugo and Andrew were very high, about 70%, which maybe I shouldn't say is very high, but if you've done any survey research, it's actually quite good. I think explaining what the purpose of the study was creates an understanding that it's important. We actually had people who were pretty willing to participate. To the extent we could, we used ethnically matched interviewers. Certainly in Miami, we had bilingual interviewers. I think that helped.

This is kind of a review of the Kentucky study. Even though I mainly want to talk about social support, I wanted to spend a little bit of time on some of our basic findings dealing with psychological distress. It seems to me you always have to start there, although for the most part we probably can understand that. Certainly we hope you can see from the slides that it would be very easy to be distressed in such an environment. This is a brief overview again of the design from the Kentucky study. I'm mainly going to be talking about the '81 flood which occurred between the first and second waves of interviewing.

The May '84 flood was actually even more serious than the '81 flood. That occurred while I was writing the grant application to study the '81 flood. It was a touch of complexity, but it actually ended up being kind of interesting.

This probably should look familiar to Bob and Carol. This is a crude way of depicting how long-lasting our findings were across the four post-flood waves. Now, all of these we controlled for pre-flood symptoms. This really is a rare opportunity to look at how long changes in symptoms persist across four different aspects of psychological symptoms; cognitive symptoms (like worry and self doubt), traumatic complaints (bodily concerns were particularly prominent among older people), negative affect (depression, feeling bad), and positive affect (a general sense of quality of life, being happy, contented, the other end of the dimension of negative affect.)

We measured two different aspects of disaster exposure in this study. One was personal loss, that is the losses people experienced at the individual household level. Because of the nature of the flood, we had respondents from across about 15 counties, which are really small in Kentucky. Counties are very small units and if you ask someone where they're from they give you their county, so they're units people identify with. In some cases, we have people who lived in one of these counties but had not personally experienced any losses. Then we also had some that were in adjacent counties or non-victims. We had three groups, which we were using. Following on Bowman's work we referred to them as primary victims, secondary victims and non-victims.

What we saw that was kind of interesting was that the increases in negative affect were particularly long-lasting among those who were primary victims, who had direct losses from the floods. However, there were corresponding declines in positive affect which were more pervasive that actually extended to the community at large. When you think about the general fatigue, the mess, and the stress on communities, we thought that was an interesting finding and not something that very many studies have been able to look at because we usually don't have people from across multiple sites.

When the floods occurred in the midwest a couple of years ago, it was one of the times I really toyed with the idea that there was a great study to be done there, if someone could have figured out how to put it all together with all those different communities who behaved so differently as the floods came down the river. Some spent days building levies and then saw them wash away. Other communities didn't quite do so much. Lots of things happened at the community level which would have been fascinating to study, but I didn't do it.

DR. CARDEÑA: Can I ask you something? I didn't quite follow this. Does it mean, for example, that cognitive symptoms were present when you said fall '81 and spring '82?

DR. NORRIS: Yes, but by fall '82 they had dissipated. This is a measure of how long they lasted. The declines in positive affect, the effect of personal loss, lasted to '82. The effect of community destruction lasted until the spring of '83.

DR. CARDEÑA: What is your definition of incidence in this case? For example, cognitive symptoms, whether anybody endorses it, or whether a certain percentage of people endorsed it?

DR. NORRIS: It's really not like that. It's really whether there was an effect of that variable at that time, in the sample as a whole.

DR. CARDEÑA: From the pretest, whether there was a significant effect at that time?

DR. NORRIS: Right. If we were to have done this study with diagnoses, I don't think they would have had very much at all. I think if you look at the literature on other floods, that would be pretty consistent. Most of the kinds of symptoms we get after events like floods are pre-clinical. They're distress, they're fatigue, some depressive symptoms, but not very much that we would call a diagnosable disorder. Our measures were all of self-report survey instruments.

This next one is actually kind of more interesting. I always have a hard time not going beyond the data a little bit with this one, so forgive me if I do. These are showing the means over the five waves on the three mental health measures, which were actually scales this time; CESD depression, Spielberg anxiety and general well-being scale. At the bottom are the various health measures. These are standardized forms so the mean is right there.

What's actually plotted on here is the mean of the highest, or the personally affected group, which is about 50 people. If you look at the means over time, what you see in this case was they actually peaked at the third wave rather than at the second wave. Wave one was pre-disaster; wave two was the first one after the disaster. In some cases they actually continued to increase a little bit. We thought this might have to do with the fact that that was also in the spring of the year which was the same time in which the floods struck. It would be consistent with the idea of anniversary effects; that's where it was kind of a little bit beyond the data to claim that's what it is. However, it's kind of intriguing.

Then they dropped down tremendously after that to just about where the sample mean is. Then, at least for the general well-being scale which is a little bit more like the health scale, we expect to go up a little bit, which again is at the spring. The one, three and five are spring waves and two and four are fall waves. It was just a little bit intriguing. That was our last wave of interviews so I can't say where it went beyond there. It was interesting to see that it wasn't a nice linear decline.

DR. CARDEÑA: It's decreasing well-being on the top?

DR. NORRIS: These scales are all scored so that the higher the score, the more symptoms. Moving to Hurricane Hugo, in this study we used the three symptom interview, which is a short form of the SCL-90. We also used the Cullens and Hogerman's scale of perceived stress, which is very similar to basic stress scales. It correlates quite highly with depression. In Hugo, we had a lot more people who were personally affected by the disaster on the way we did the sample. Whereas in the Kentucky sample we really couldn't distinguish between different types of exposure, here we could. This is showing very broadly that there were significant effects for all four of the major stressors we studied, which were injury, life threat, financial loss and personal loss.

DR. FULLERTON: What about people who have injury and life threat?

DR. NORRIS: That also would show; it's more.

DR. MARLOWE: Do you have the scores for categories as well?

DR. NORRIS: Yes, but not with me. I do have the means compared. They're higher than the norms, but not as high as the clinical.

DR. MARLOWE: It would be interesting for us because we have a vast amount of BSI data on soldiers in the Gulf, pre-combat and then first combat, and then under normative conditions. Those scores of course for pre-combat are much much higher than anything that you see as means in the civil society. I would like to compare them with your scores.

DR. NORRIS: I can get those. Personal loss is interesting. The effects of personal loss and the loss of things of sentimental value really seem to be very important for disaster victims. It's one of the things they always say when you talk to them. They have lost a lot of expensive goods, but it's the loss of the photographs and the keepsakes that are most felt. One of the things I would recommend to people is to have quick access to the personal things that are most valuable to you because they're probably the most salvageable as opposed to the parts of a home which, of course, you can't really do anything about or take with you. Life threat was actually a pretty high percentage in the areas that we examined. About 46% of the people in Charleston and Charlotte said that at some point during the disaster they did fear for their lives. This probably is a bit of an overstatement.

DR. SINGER: Aside from partial regression coefficients, do you have the total R squares for each of the outcomes?

DR. NORRIS: Not with me. We published those. They're not huge. Well, they weren't bad, they got smaller over time. One of the things we realized, as you might expect, is that they're by population. For example, the findings for the sample which I'm showing here aren't as strong as if we look in the middle aged group particularly. That seems to describe many of us here. The effects are much stronger; actually, they were the age group that was most strongly affected. R squares were really quite substantial. You can basically square those and get close to what they would be.

DR. SINGER: You don't know what the values for the co-variants are?

DR. NORRIS: Yes, education always had a pretty substantial effect. In Hugo, we had a very short measure of symptoms that are consistent with PTSD, measured through self-report. Briefly, that would just be pretty much what you would expect. This is breaking it down by age. There really weren't age effects on this, but this is such a pretty picture I had to bring it along anyway. Aging is one of my other lives.

One of the things that was interesting is actually a very small percentage met all the criteria. This is one year later, so this is a while afterwards. That's predominantly because very few met the criteria for criterion C, which I understand is quite consistent with other research in this area. What I think is interesting is to show very high percentages that met some of the other criteria. Almost everyone had some intrinsic symptoms for criterion B. Around 40% still had some arousal symptoms a year later.

I use Hurricane Andrew, very quickly, to point out that this sample was really seriously affected. This is breaking it down by our three subsamples. One of the things I was particularly struck by was how many people had not evacuated. I'm actually doing some research on that now, too. Between 60 and 80% said that they had feared for their lives. A third to a half had an injury, an actual physical injury in their household and 80 to 90% on this Likert scale chose the category saying they had much or enormous damage.

DR. FULLERTON: Did you ask why people stayed?

DR. NORRIS: Yes. We're analyzing that, actually. There was a multitude of reasons. We've also been seeing if we can predict who evacuated or not, based on all these variables that have been suggested as predictors of evacuation. This whole great big long equation of about 15 variables predicted 7% more than chance, i.e. saying no one would evacuate. We've got a lot to learn about that. They gave lots of different reasons.

I want to back up just a minute before I give a couple more findings about Hurricane Andrew. That's because preparing for this study was sort of half the fun. That was because branching out into studying Spanish-speaking people was a new and interesting area. I collaborated with a woman who is bilingual and also a couple other students who are bilingual. The first thing we did was develop a Spanish version of our questionnaire through translation and back-translation, which was a very interesting process. I had never done anything like that before. The process is that first someone independently translates it into Spanish and then a separate person translates it back and then you compare. Occasionally, it was almost amusing some of the things that would come back. Some of these concepts were particularly hard. Numbing was one that was particularly hard to be able to translate into Spanish. Others weren't as bad.

Anyway, after we had gone through that process and then had people from Mexico, Cuba, and all those kind of main places look it over for clarity and some minor variations in Spanish across areas, then we did a pretest where we had 53 bilingual people in Atlanta come into our lab on one week. We randomly assigned them to take either the English or Spanish version of this modified questionnaire that you didn't have to have been through the hurricane to fill out. Then we had them come back a week later and at that time we gave them the alternate version. Then we were able to look at the correspondence between the two. This is basically what we used to evaluate the cross-language stability of our measures. We've ended up doing quite a bit of work with a revised version of the civilian Mississippi that we developed for this study, which is actually in press now, both an English and Spanish version. It actually is revised from the original version, but we found it worked pretty well.

DR. CARDEÑA: Printed where?

DR. NORRIS: The Journal of Traumatic Stress.

One of the reasons it was important to use the civilian Mississippi, is we have some differences between language. It's kind of important to at least have some indication that it wasn't due to the instrument. This is just some basic data on the percentages. First of all, this is meeting criteria for depression that's based on the Epidemiologic Studies Depression Scale using three different cut points that had been presented in the literature. Even if you take the most stringent one of a score of 23 or higher; we had 20% at that level. All these would be far greater than the norms. Using the most lenient criteria of 16, we would have 38%. Then 24% met all criteria for PTSD and you can see higher percentages for those. This won't surprise anyone that's in the trauma field, it's almost more for some basic validity as well as anything else. Following Hurricane Andrew, we still saw considerable variation in how strongly people were affected based on what their experiences had been. I think this is very consistent with the thinking about trauma now.

DR. MARLOWE: Is this perception or actual experience?

DR. NORRIS: This is perception, as self-reported. Having seen the houses that they were living in, and knowing that most of them were in them, I tend to think it was probably pretty real for most of these people. There were many accounts of people spending the night in bathrooms and closets and thinking they were not going to make it. Injuries weren't always the kind that took people to hospitals, but to some extent an injury of some sort occurred, which I think is more a psychological event in this case.

Anyway, you see the percentages are much higher among those who were highly exposed. These are the data broken down by ethnicity and by stressor. Let's look at the top line for an example since we know life threat is a serious stressor. You can see a pretty striking difference between the Latinos in our sample who were Spanish-speaking and English-speaking. Right away it was pretty clear to us these were going to have to be treated as two different populations, actually for some reasons I will get to later on.

DR. CARDEÑA: By Spanish you mean monolingual?

DR. NORRIS: Preferred. When we went to interview them, we asked, "which language would you prefer to do the interview in?" This is based on what their preference was. Many of these are actually bilingual people, but this is the one they leaned towards. They differed in a number of ways. The Latino people who chose English on everything we've looked at so far have looked almost exactly like the Anglos. They're very acculturated, assimilated, whereas the Spanish were also living in different situations. The reason for this is to show the overall rates are different. This also shows, even among those who experienced a particular stressor, they're different, which is what I wanted to particularly explain.

DR. SINGER: There's no way to tell whether or not those who were most threatened reverted to Spanish even though they might have spoken English otherwise?

DR. NORRIS: An interesting idea, I never even thought of that.

DR. URSANO: The idea being, Jerry, if you're more threatened you return to something that might be safer, more comfortable and therefore increase the rate of people that are in that group.

DR. FULLERTON: Were they asked the choice in English? In other words, in English someone said to them do you want to do this in English or Spanish?

DR. NORRIS: That was very changeable depending upon the initial exchange between the interviewer and the person. Sometimes they may have been initially greeted in Spanish. We had it all written in both languages, even the consent form and all that. That's an interesting question. I must say I never thought about that. I will have to think about that a little bit.

DR. FULLERTON: When you asked about personal life threats, did that include family?

DR. NORRIS: We did ask about family, but I haven't analyzed that data. We have some other information about networks, losses in the networks and injuries in the networks. These are personal stressors.

DR. CARDEÑA: Did you examine socio-economic differences between people who choose Spanish versus English?

DR. NORRIS: Yes. The average education of those two groups was tremendously different, which I have a little data on later. With again, the English speaking being in between the Anglos and Spanish-speaking. These differences, though, persist when you control for SES (socio-economic status) to the extent one can control for it. That's probably always an issue, how well you can actually control for the complexity of class.

DR. URSANO: Also gender.

DR. NORRIS: In this case, they're all equally balanced with gender and age. Have we looked at gender? I don't think we have any gender effects. We did in Hugo, but it was a race by gender interaction where black males were the most affected population, which I think is pretty interesting sociologically. I think especially given interest in social support.

DR. SINGER: There's a whole literature on the difficulty of trying to control for SES across different ethnic groups because income, education and the like mean different things to each group.

DR. NORRIS: Absolutely. It was tremendously hard. We asked questions about what their occupation was before they immigrated. Lots of the Spanish speaking people were immigrants. Even with all that, it's very difficult.

DR. SINGER: Even within the black and white communities there are different indicators of SES.

DR. NORRIS: Right.

DR. MARLOWE: There are also cultural differences in the perception of organizational threats that are linguistically based. There's been a fair amount written about this in terms of both language and culture. That may account for some of the difference in the response rates.

DR. NORRIS: I think that where particularly that came to my mind was in seeing that Latinos were more likely to say they had these stressors than the others. This also could be environmentally based as well and is necessarily just perceptually based because when you tour the area they were the ones most likely to be living in Homestead in some of the worst affected areas because of their economic status. Within the groups that were threatened, it's more endorsement of symptoms within those groups.

DR. SINGER: That's also consistent with the reports on pain during illness and the cultural differences. Latinos, often, (at least in the Boston studies) are more likely to report pain and distress for the same levels of illness.

DR. MARLOWE: Acculturation is a factor. If you go back to the original studies today, for example, Jews were highly symptomatic. Now there's no difference between Jews and Yankees.

DR. NORRIS: This would be very consistent with that.

DR. MARLOWE: It can be a very major confounder in the presentation of symptoms.

DR. FULLERTON: Within a small community area, people might typically speak Spanish. In other words, that might be area-linked. It's within the culture of maybe a few families. I know in the Jewish tradition, that's true with Yiddish. It used to be where there would be a clustering of families that primarily spoke that on the inside. They were more comfortable speaking that.

DR. MARLOWE: Part of it is length of time since immigration. That is true of sixth generation Hispanic families that are culturally bilingual and a lot of folks who just arrived in the last 20 years.

DR. NORRIS: This area of south Florida is an interesting environment because it is so bi-cultural and bilingual. I have been down there on a couple of occasions where I went to a place and I couldn't order coffee because there was no one at the place who could speak English. I don't know why I never learned Spanish for coffee.

DR. MARLOWE: Miami is now considered the primary city of Latin America.

DR. NORRIS: Let me turn to talking about the social support. First, I'll basically define social support for you as social interactions or relationships that provide individuals with actual systems, or that imbed individuals within a social system believed to provide love, caring or attachment to a valued social group or dyad. Now, one of the reasons I really like this definition is that it focuses on the three major aspects of social support. You really must take all of them into consideration.

One of the reasons that my research team doesn't do as excellent of a job in measuring symptoms as many others is that we spend so much time measuring social support. This really constitutes often about half of our interview. We give a little less attention to the symptomatic consequences than have many other groups, and more attention to some of the social consequences.

Received support is concerned with the actual exchange of helping behaviors around the time of the event. What do people actually do for you? Received support is really a very different thing. It's almost akin to a personality trait rather than an environmental variable in that it has to do with people's beliefs about being reliably connected to others, their expectations that help would be available for them if needed. I think that's probably the key. It's not so much about what happened to you in the past as it is about what you think will happen to you in the future - hypothetically, if you will. Would it be there? If I needed social support tomorrow, would I have a way of getting it?

The last aspect of being attached to a valued group or dyad gets into this whole idea of social networks or issues of social embededness - of size, activity levels, and other things about social networks in addition to helping behavior.

Let me tell you how we got here. Maybe this is jumping ahead a little bit too much. Clearly, I think you've seen in the data, and if not in our data, in lots of other data, that there's evidence of lasting distress following these events. In some cases it's severe, in some cases not severe, but certainly we see lingering distress. One of the questions we wanted to ask about this way back when we were starting the research was, "why?" That's a pretty basic and important question. Clearly there are many different reasons. I bet if we went around the table we could generate interest or research programs that reflect all the many different ways in which an event can result in lasting distress.

I guess the perspective that we took on this from the beginning was an assumption or a proposition that disasters have the capacity to disrupt the very resources that protect mental health. It's probably because of my community psych background that we really took a resource oriented approach to our study on this. Once you start thinking about resources (although there are some others we could talk about), social support immediately seemed like a very key resource because of a very long literature showing that it has both main effects on mental health; that is, the higher your social support, the higher your well-being. Also in many cases, there are interactions or buffering effects. Stressful life events seem to have less effect under conditions of high support than under conditions of low support.

With that data as background, we were interested less in the buffering model than in studying social support as an entity of importance in its own right. We think about it probably as a stable resource and it's less well understood as an entity that can be affected by events in its own right. I guess maybe most clearly it would be to see if you have some expectations of support. If your experiences confirm those expectations, it should remain fairly stable. If your experiences violate those expectations, then there's a good chance it could go down.

Logically, it follows that disasters create, by their very nature, situations in which that's very likely to occur; that those expectations would get violated. There's all this social disruption in the area. People are relocating and there are changes in neighborhood composition. People decrease their social activities. They're not out and about in places where they interact with their social networks.

Then there's also this more basic idea of the need simply exceeding availability. Consequently, our hypothetical notions of how much social support we have are probably based on some idea that, "if I need help tomorrow my network is going to rally around me." We probably forget that, in disasters, that network is probably attending to its own needs as well. Consequently, people can be left feeling somewhat isolated and let down. We wanted to study whether in fact decline in perceived support might partially explain our findings of distress. For those of you are familiar with mediating models, this is a classic mediating model.

I'm going to have to go back and forth. This is going to get awkward. These are the same kind of figures that we used for the mental health figure from the Kentucky study. Let me go back and start with that. This is where we first looked at that. We had a pretty good opportunity to look at that in that study once again because we had pre-event data. We did find a decline in all three of our measures, which are social participation, kin support and non-kin support, at least through the first post-wave interview. For non-kin support, some of those effects were more lasting. I'm going to move over this quickly so I can get to the model. I feel like I skipped one somewhere.

DR. FULLERTON: That's change in expectation?

DR. NORRIS: Again, how long the decline lasted. These are bad things, for instance, a decline in kin support lasting all the way through the end of the study.

DR. SINGER: That's the Kentucky flood data?

DR. NORRIS: Yes.

DR. FULLERTON: You were controlling for support?

DR. NORRIS: No.

DR. FULLERTON: Initial?

DR. NORRIS: Pre-event. That was looking at decline or change in support. Basically, this is getting into more of a path or causal model. All I really want you to notice on this, in terms of explaining these effects, is we were primarily concerned with explaining the effect of personal loss on wave two depression and community destruction on wave three depression. That's where the main effects of the disaster stress variable were. That was what we needed to explain.

DR. SINGER: Does wave one depression predict the sense of destruction or personal loss?

DR. NORRIS: No, it didn't, interestingly enough. We thought it would, but it did not. When we switched this model around, let's see if we can explain social support with distress, that didn't work either. That's one of the reasons we kept going with this.

Now very quickly here, let me show you that we did in fact find pretty strong evidence that this mediating effect was going on. When you add in social support into the model, the effect of disaster stress (including the numbers from the personal loss measure on wave two depression) drops to almost zero. On the other hand, there's a very strong effect here where the higher the disaster stress, the lower the social support and the higher the social support, the lower the depression. In other words, it was, in fact, partially the declines in social support that accounted for some of the symptoms of depression and some of the other symptom measures that we saw. You see that this is what we mean by mediating process, that the declines in support partially explain the effects we were seeing for distress.

DR. CARDEÑA: Still, the biggest effect is depression.

DR. NORRIS: Absolutely. That's always the case. Nothing ever explains a subsequent symptom measure better than a pre-event symptom measure and that's across many different kinds of stressful life event studies that I've been involved in.

DR. MARLOWE: Of course it's also the largest correlation, if you were supported well prior, you're supported well post.

DR. NORRIS: Yes, stability is always greater than change. These should be understood in that context.

DR. FULLERTON: Even if it's stability on a low level?

DR. NORRIS: Yes.

DR. FULLERTON: Even if the person says it's very low on initial support and remains low?

DR. NORRIS: Well, that would decrease your ability to show the change to the extent that that's true, except that that's not really very true here because, for the most part, people are tremendously optimistic about their hypothetical social support. Well, I guess the next question we asked is whether that was inevitable. Actually, there's a transparency I seem to have misplaced somewhere that shows this Kentucky sample just didn't get very much help. So maybe that was partially what was going on here. They were the Appalachian poor; everything you could come up with which might suggest why. It wasn't one of these disasters that everyone got so psyched up about like Hurricane Hugo. Did you know there was a flood in Kentucky in 1981? Probably not. It didn't get the same sort of attention that some of these other events received. We raised the question, "is this inevitable or is this something that could be counteracted by higher levels of received support?" That was in large part what we were to look at with Hurricane Hugo. Let me talk then some more about received support.

What I was talking about in the Kentucky study was this perception of support or these expectations of support.

This model is the deterioration model. I'm going to blame this title on my colleague, Chris, who calls this the "Deterioration Deterrence Model." Basically, it's the idea of whether received support can counteract this decline in perceived support we otherwise seek.

First of all, let me show you this, which is from our scale of received support. In Hurricane Hugo, we asked about support that was received over the first two months following the hurricane. We did a pretest on this to see if we could measure this reliably, which I won't go into very much. This is actually the item level, which I thought was striking because these different items have different aspects of support and different types of support which I will come back to in a minute.

DR. SLUSARCICK: Is this your own data?

DR. NORRIS: Yes, revised from Barrera's. We've been revising this measure for so long it bears little resemblance to the original, but it started with Barrera's ISSB (Inventory of Socially Supportive Behaviors.)

Anyway, you can see these pretty striking differences between people who were not disaster victims at all, people who had low impact and high impact. I'm showing this primarily to illustrate that support was definitely being received by people following Hurricane Hugo. Therefore, we were able to test the idea that deterioration deterrence or, more simply, that received support can counteract this decline in perceived support.

It's a fairly simple three variable model. I'm leaving out control variables, but basically the logic here is that, as we've already shown, we expected to see disaster impact inversely related to subsequent perceived support. However, we also know more broadly from the stress literature that if there is a mobilization effect, stress follows like some sort of paradox. It's positively associated with received support. When do you need received support? When you're under stress. So, unlike perceived support, it should actually be higher, which is what that last graph was hinting at. We could anticipate based on other literature that there should be a positive correlation between received support and perceived support down the road. Notice this is support received around the time of the disaster, then about a year later. What is their expectation for support in future, not only disasters, but just in future generally?

DR. FULLERTON: Did this include people who also were not there? Who are the people? This is being measured across the low impact and the high impact groups that you have?

DR. NORRIS: Yes, this is again, measured in the sample as a whole with variations in each of these measures. We're not looking at particular cases, this really is how variables are operating within the sample as a whole.

DR. FULLERTON: My thought has to do with evacuation and its relationship to perceived and received support.

DR. NORRIS: Can we come back to that? We really can't measure that well because we don't have premeasures of what received support was. This is all after the fact. This is the first few months after. Many people did say the reason they didn't evacuate was that they had no where to go. They didn't have a car. They mentioned resource issues, but that's kind of a little more direct.

DR. FULLERTON: At Buffalo Creek, I think they relocated everyone. Everyone wanted to stay together, so they stayed simply to be together. I know Elie Karam has been studying depression and those people who evacuate versus those who don't. That's what I was thinking.

DR. NORRIS: Do you mean evacuate or relocate?

DR. FULLERTON: That's different.

DR. SINGER: Have you done any social support of the sort that Eugene Littwak does prospectively at Columbia?

DR. NORRIS: Tell me more about that.

DR. SINGER: She interviews people, mostly elderly in Miami, on a network of their associations; what churches they belong to, how often they go to community events and things like that. She reconstructs a social network support index which she uses to predict the influence of illness on them.

DR. NORRIS: What we do is similar to that in our different measures. We have one being more social embededness. It gets more at those structural elements, which I really haven't talked very much about today. If I had done the second set of findings from the Kentucky study, you would have seen that the same mediating model that holds for kin support or perceived support also holds for social embededness, which I think makes sense. Those kinds of structural elements are probably even more strongly hurt by a community level event like a disaster.

The kind of basic signs here were quite consistent with this idea, in that we do see, reading backwards here, the path from disaster to received support is always positive in sign. The path from received to perceived support is always positive in sign. The path from disaster to perceived support is always negative in sign, which if I illustrate this in a different way, it may be easier to see.

If I had a media department I would have slides of everything, but we don't have one of those at Georgia State. These slides are always harder to read than I think they're going to be, but up here on the side is perceived support. The higher the better. What you see is that the black line is among people who receive little help. What you clearly see is those who have disaster stress have much lower perceptions of social support than those who were low in disaster stress. That's not a very good label. That's actually like this summary measure of different kinds of losses.

DR. SINGER: You can say that people perceive the actual level of support they receive, although it doesn't track quite accurately. You're measuring both of these at the same time aren't you?

DR. NORRIS: Yes. One is being measured retrospectively. Maybe I should mention the pretest data, because what we initially did in the pretest is we interviewed 60 of these people at the time frame in which we were measuring social support. We then went back and interviewed them again to see if those reports would change over time when we added the rest of our sample. We're pretty confident that this isn't backwards (to the extent you can ever say that in this kind of research which is questionable.) Social support, though, is being measured at one year. In fact, we also can show this at 18 months and 24 months later. It holds, as well, based on the support they're saying they received around the time of the first two months after the event. When high levels of help had been received, you can see that the perceived support is definitely higher, both under conditions of high and low impact.

DR. SINGER: The thing that puzzles me about that is that if there is a disaster, usually help will flow to the people who need it most. If one actually measured the level of help received, the people who are low in stress, if your other data is true, are also low in damage, and yet they perceive they get --

DR. NORRIS: Actually, that's exactly what that was showing. I will show you exactly what you're saying in a minute.

DR. SINGER: It's puzzling.

DR. NORRIS: Clearly, where this basically led us to was kind of backwards. This is one of these kind of things. I don't know if you have things like this. I feel like I could give this in 15 different orders. I should shuffle my cards because every finding sort of precedes every finding.

Let me talk about the mobilization of support a bit more.

DR. MARLOWE: Can I ask a question? Are you perhaps indirectly measuring the perceived psychosocial intactness of the individual?

DR. NORRIS: Well, in a sense I think that's social support.

DR. MARLOWE: It comes with that perception of support.

DR. NORRIS: I wouldn't disagree with that. I think that is their sense of being imbedded, their sense of being reliably connected to others. I think it's a very important state of being.

DR. MARLOWE: It may not have any objective relationship to support, per se.

DR. NORRIS: Well, it does have a relationship to perceived support, to received support. In fact, that's partially what we're showing here. It's clearly not totally driven by received support. We know, in fact, the literature that preceded this pretty much had just said received support doesn't even matter, because if you compare the effects of these things, perceived support is always going to have stronger relationships with mental health than received support. We thought the research was sort of backwards. It was trying to say that received support mediated the perceived support mental health relationship. Whereas we were looking at it the other way around. What happens is that received support feeds into perceived support, which perhaps protects it when it's threatened by events like this.

DR. SINGER: For received support, was there self-disclosure of how much they thought they got or was it a measure of actual amount of materials and goods?

DR. NORRIS: All of this was self-report on 16 different kind of items which we grouped by subscale on a map. It's on a Likert scale of amount, but to some extent people can't report. You have to understand there's only so much accuracy people can report on a scale of a lot to a little but they can't tell you that 15 people said hello to them.

DR. SINGER: The reason I'm asking is you have an arrow going only one way. It could quite possibly be that the level of support you perceive you have influences your appraisal of what you actually receive.

DR. MARLOWE: Let me ask a question another way.

DR. NORRIS: I can show you that that's not the case here. Basically, that does not explain the data as well. It's kind of a complex process, but you can generate different models that say these different things and compare them. That one just doesn't have as much power in explaining the data as does the one that's the other way around.

DR. MARLOWE: Were you also measuring things that can be objectively measured? Food, money, shelter, provisions, when you got them, how quickly they came, et cetera?

DR. NORRIS: Yes, let me move on to that.

DR. MARLOWE: Where does that come in?

DR. NORRIS: These are the different aspects of received support that we measured. The aspects you're talking about are mainly in the domain of tangible support which are the most concrete.

DR. MARLOWE: They're the measurables.

DR. NORRIS: Well, I mean that's probably from your point of view. Emotional support is very important, as is informational support. In my opinion, these are all measurable.

DR. MARLOWE: Those are measurable subjectively. The others are measurable objectively. You know when the check is cut.

DR. NORRIS: We're also measuring them subjectively.

DR. MARLOWE: You know when the check is cut. You know when the trailer arrived. You know when the food arrived.

DR. NORRIS: Yes. It's also important to consider different sources of support, which I may not get to. There's also things that influence received support from the background, size of network, women. This doesn't have to do with disasters but just generally. There are lots of things that predict how much support people will receive. These are some of the factors that have to do with that. This is to give you the background.

Now this, just quickly, is getting to a point that came up earlier. If you're going to consider the mobilization, we were really interested in trying to see if we could identify and label the rules that seem to govern the process. One clear rule that we know from social psychology, generally, is a rule of relative needs. Across every subscale, whether we break down by source, whether we break down by type, we see a very strong relationship here that the more losses people had, the more support they received, which is good. That's a sign of good community functioning. That's the way it should be. Support should be allocated equitably, not equally but equitably.

This is from Hurricane Andrew. You notice the effects are there, but they're much less pronounced and that's because we don't have a no-impact group. This is all among people who are all in bad shape. Even kind of within that, there's some variation. This is looking at it by family. You see the same thing. By source, people with high losses receiving more.

The rule of relative needs is the only rule that operates. One clear pattern we saw in Hurricane Hugo was something we've labeled the pattern of neglect. That is that we see interactions between demographic variables and amount of loss in predicting how much support people received. That is to say, taking the race example, victims who were black received less support than comparably affected victims who were white, which is probably the clearest way to state that. It's not all together. You notice that there are no impact levels.

There's really no difference between groups. This is kind of a heuristic figure. It's not exact data because it held across different variables. At high impact, there's spread so that whites were getting more help than blacks under the same conditions. Another interesting pattern, though, is the conditions of harm. By that, I mean threat or actual injury was something we labeled pattern of concern. Because in that case, we actually saw a reverse effect than we did with property damage, which is for the elderly a particularly salient issue. The elderly were actually getting more help than others of other age groups. That's a good thing too, probably.

Well, some of these findings led us also to be interested in exploring some other variables that now could be important in predicting received support, particularly following up on the issue of pattern of neglect. There are lots of ways we could talk about that, there's lots of ways we could explain it. Probably the very clear issue is the resources in your network. If you're poor, chances are your network is too; and actually that may not be the best example here, although it did hold for some SES measures as well. Those of us who are affluent and well-off, have affluent and well-off networks and so forth. There also was potentially, we thought, some socio-cultural variables that might influence this process, particularly in the area of help-seeking that we wanted to try to add a little bit to in our study of Hurricane Andrew.

These are the R^2 changes for different steps in some regression equations predicting received support within each of these groups. This isn't between groups now, this is within each of our samples. What I'm trying to illustrate here is that across samples and across source, three things were always right in there of what was predicting received support more than anything else; size of the network, how comfortable people were seeking help and the level of disaster impact. I sometimes almost have to make fun of this because I feel like, "well, I've now spent 10 years in order to discover that the three things that predict whether or not you get help are whether or not you need it, whether or not it's available to you and whether or not you're willing to ask for it."

DR. SINGER: Disaster impact looks like it's almost trivial. I realize it may have statistical significance but whatever variance it accounts for isn't very much.

DR. NORRIS: Well, I understand you're saying that, but I guess it's kind of based on other research in this area that I've done, and others. Effects around the 5 and 6% of variance range for an event are actually pretty substantial. Also, this would be lower than if we had done this in Hugo, because keep in mind there's less variability because we don't have a no-impact group. This is among people who are ranging from the much to enormous, as well. A slight exaggeration, but when you think of all the many causes, it's clearly just one. They were higher than any of the other demographic variables, cultural variables, or anything else that we examined. These were the three that always came through.

DR. URSANO: Actually, that represents the increment beyond the standard support given to the disaster victims.

DR. NORRIS: This is after. This is kind of hierarchical here. Controlling for demographics, controlling for network size, controlling for help-seeking comfort, how much did disaster impact explain? Although they were all pretty independent effects.

Now we were interested because help-seeking in all of those was the strongest variable of all. We thought that was also particularly important to understand and how that might vary across our different ethnic groups in this study.

We measured several variables, dealing with different kinds of cultural values, attitudes and beliefs, which we're really slowly developing. These were also included in our pretest. Based on some work of Triandis, largely we developed a measure of collectivism which has to do with a communal attitude. Familialism has to do with tightness within the family. Fatalism which involves locus of control. Spiritualism which is considered very important, particularly in the black community, but also in the Latino community.

Acculturative stress is an interesting one because this had to do with interpersonal tension felt when interacting with people from different races. We revised the measure that had originally been developed for African Americans in some research that's done in Atlanta. We sort of revised it by source, asking people what ethnic group they identified with, and then used whatever they told us in this fill in the blank way. Anyway, these aren't striking effects by any means. I don't have the standard deviation up here, but they're all pretty small. Notice again quickly that the English language preferring Latinos are always kind of in between whites which anchor one end of the scale and Spanish preferring Latinos who anchor the other end. All of these are different across these groups, kind of these basic values they hold. This was really a tough part of this study. It was a fun part and it was really a tough part to get a handle on. What we were really trying to do was operationalize culture and culture is something that gets tossed around so much these days. We really wanted to try and operationalize that psychologically. This was our initial baby step towards that goal. Even controlling for education, we do find differences in the extent to which these values are endorsed by different groups. Then we tried to see if they were predictive of how comfortable people felt seeking help following Hurricane Andrew. Quickly, the main thing you notice here is they weren't really very predictive, except for blacks, which was interesting. At first, I thought these findings are totally not understandable. They hold for one minority group, but not for the other. What could this possibly mean? Until someone in the area pointed out to me that in south Florida, perhaps the true members of minority groups are blacks rather than Latinos since Latinos have such a sizeable community there. That may be part of it.

I wanted to point out that there are a couple of variables which were particularly predictive among blacks together which I think is interesting food for thought. These were the spirituality and acculturative stress. Pointing that directionally, it means that among blacks those who were low in spirituality and high in acculturative stress were particularly uncomfortable seeking help. I think that may say something about some people who were perhaps estranged or alienated both from their own community and from the majority community, making it difficult to deal with others outside their networks.

DR. URSANO: Could you explain acculturative stress again?

DR. NORRIS: That's the one that has to do with interpersonal tension if you're dealing with ethnic groups other than your own.

DR. URSANO: Cross-cultural?

DR. NORRIS: Right, so if I'm white and I'm dealing with a black person, how tense am I, and dealing with a Latino person how tense am I?

DR. MARLOWE: Back many years ago, there was a study of four cultures in the Four Corners area of New Mexico. It looks at cultural themes that may be more appropriate than some of these to natural disaster; such as the group's perception of its relationship to nature, whether it's subordinate to it, over it, et cetera. If you can find it, they developed a very impressive schedule in the pre-computer days. It's by Florence Kluckhorn and Fred Strodtbeck, the title of the book is Variations in Value Orientations. It's referred to as "The Four Corners Study."

DR. NORRIS: When was it written?

DR. MARLOWE: Well, I guess it was published about 1958.

DR. NORRIS: That's interesting, I will get that name from you later.

DR. MARLOWE: It was a very large Harvard project at the time.

DR. NORRIS: One other last interesting finding from this back to my slides, I will get to quickly and then I will close. I don't know how well you can see this, but the other interesting finding from this, and it doesn't show up real well in any of these figures, was an inverse effect of disaster impact in the case of predicting help-seeking comfort, which was totally different than what we had anticipated. That is, as your levels of loss go higher, people seemed to be less comfortable in seeking help. Of course, after the fact, you can usually make sense of findings more than you can predict them in advance. This may be indicating that at some point people are so overwhelmed by their losses that it seems like they have so much to ask for and they don't know where to start. Again, this is a particularly significant effect among the blacks in the sample. In fact, if you break it down by group, it's not a significant effect for whites and Latinos. It is a significant effect for blacks in the total sample, so it's kind of equivocal. However, I think that's interesting and perhaps worthy of some additional research and mainly because my concluding figure here is this sort of grand truth. This is like a truth model. This has to be true. Now this sort of summarizes our results. I will explain that to you in just a moment. That has to do with whether we have some cycle here. There's some discussion around loss cycles and people going in downward spirals and this seems to be like that. It's either some sort of cycle or just some kind of causal quagmire, I'm not sure which.

We start with the idea that, clearly, disasters lead to psychological distress. We know this, in part, is because they reduce perceptions of support, which influence psychological distress. On the other hand, they also in many cases, maybe for most people, mobilize received support which serves to protect peceived support. On the other hand, although disaster distress does that, we know there are also many factors that influence receipt of support other than just your needs, which is very generally labeled here as advantage. This could be both psychological advantage or socio-cultural advantage. This should be pointing the other way in this case to illustrate my point here, that distress may actually exacerbate some of the relative advantages and disadvantages of people in the community.

Finally, we know all these socio-demographic factors have some influence on distress. It even seems like there may be some reverse effects going there if we think of that more specifically as help-seeking comfort; those who are high in distress naturally have less advantage in the help-seeking process because they're getting overwhelmed by their losses. It's all this big cycle, or perhaps like I said, a causal quagmire. I'm not sure. We're continuing to explore many of these things. I think we have a long way to go in understanding the cultural dynamics of help-seeking. We've just begun to explore some of those dynamics.

In closing, I want to say one thing that I always feel compelled to mention and it hasn't come up here today. There's a very common notion in the world about the concept of altruistic community. This idea that following disasters there's this massive swelling of heroism and support and it's this great positive experience people go through. I don't want to deny that that's the case and certainly there is massive outpouring of help that is very touching in many of these settings. Victims, themselves, will testify about how much that meant to them. I think we need to keep a healthy skepticism about that idea, too. For one thing, when do we usually see this? The media goes into disasters on the first day when it's very novel. People are roused, they're out doing things, before the fatigue sets in, before the networks start to break down. Over time, we feel this grand altruism probably slips away into situations which are a lot less positive. It's hard also to distinguish between some testimonials which are real heartwarming and a basic way that people try to cope with negative events.

We also know there are patterns of exclusion and inclusion, which are clearly important; that is, if there even is an altruistic community, not everyone is participating in it. I guess my message here is, I don't want us to be lulled into complacency by that notion that everything is fine and it's just all taken care of itself. I think a very important mission for us as psychologists, psychiatrists, social workers and all other people involved with human well-being is to try to develop some ways that help people to help each other after natural disasters and other collective disasters. Thank you.

DR. URSANO: Are there any particular questions or comments? I wanted to thank Fran and also draw particular attention to a couple variables which I think are very provocative, recognizing the difficulty in conceptualizing them as well as, more importantly, operationalizing them. One is the issue of help-seeking comfort which I think is often overlooked. One of the nice things about Fran's work is to identify a variable that has a potential intervention strategy connected to it that one can use to alter the human effects in these events by intervening around that issue. One can also think of issues of social phobia, which is another hot topic these days and whether or not social phobics are at particularly increased risk in the settings of disasters.

Secondly, there is the issue of acculturative stress, which I think is also a wonderful variable. This includes the question of cross-cultural seeking of support and how that might be addressed and measured. That can also be thought of as cross-gender for some of the other issues that we've talked about. Thank you, Fran.

DR. NORRIS: Thank you. Thank you for having me and for all your many questions.

Substance Abuse in the Military

Robert M. Bray, Ph.D.

We have Dr. Robert Bray with us today from the Research Triangle Institute. He has worked there for the last 15 years. Dr. Bray has been there since the worldwide survey began for RTI. He is going to give us an overview of past surveys and provide data from the 1990 surveys that will address questions of substance abuse and health behaviors in the military.

DR. BRAY: Well, first, let me just say that I greatly appreciate the invitation and opportunity to come up here and visit with you. We think that the work we have been fortunate to have with DoD (Department of Defense) over the last several years is important work. I thought what I might do is to start off telling you a little bit about the history and content of the surveys. I will discuss what they have tried to do and a few of the highlights of the early findings. I will also tell you where the current survey is headed and then I might say a word or two about a related project we have just received that may be somewhat akin to what you are doing. We recently received notification of funding for this project which will try to use some of these same data but make a focus in particular on women and women's health.

The military has a long history of interest in understanding substance use problems. I think this can be traced back to what occurred in the Vietnam War when they started getting these reports of high rates of substance use. It raised a lot of concerns. I think that was what initiated the outgrowth of the initial policy directives. The military subsequently began monitoring what was going on in this area. An outgrowth of some of this was some very early surveys that were done by the individual services trying to get a handle on how they were doing with substance abuse problems.

A key study in the services was done by the Rand Corporation in 1978. They did a particularly good study of alcohol use in the Air Force. As a result of that study, in 1980 DoD initiated what would become a series of surveys. An initial survey was aimed at understanding the circumstances surrounding alcohol problems and drug use from the perspective of the total active services. That particular survey was done as a worldwide survey of all active duty military personnel. It was conducted by Bird Associates, a local Beltway group. The results of that survey were alarming to DoD because they showed some very high rates of illicit drug use. Overall, the military was showing 27% of its population involved in illicit drug use. Even more alarming was that within the subgroup of enlisted men, approximately 50% had admitted to any illicit drug use within the last year. As a result of that, DoD felt the need to take some very strong actions because this was viewed as unacceptable behavior. DoD did not want this image portrayed because it could have serious effects on readiness and undermine the military mission.

In 1982, they initiated what has become a continuing program of urinalysis testing. Actually, they had done some urinalysis testing previous to this period but they had not really systematized it or continued it in a long series. In 1982, DoD began testing and experienced some challenges trying to work out the procedures. There were cases in which there were concerns about chain of custody with the specimens and appropriate documentation all the way through especially in attempts to dismiss people as a result of positive drug use findings.

Subsequent to that, there was an effort to improve the procedures and develop much tighter, more rigorous procedures for the testing of urine. This has been a very important thing for the military at least in terms of drug use because it has made a major difference in terms of the decrease in drug use. The DoD is sending a message that drug use is absolutely unacceptable as part of the military lifestyle.

PARTICIPANT: A quick question. Along with that, were there any sort of programs explaining the negative effects of drugs that might have also contributed to the lowered drug use?

DR. BRAY: Yes. There are education programs that address that and send a positive message that there are harmful effects associated with these things and we don't want you using them from a common sense perspective. Additionally, the programs emphasize that there is a readiness issue involved which makes drug use even more intolerable.

As an outgrowth of what the military started, there was a spin-off into the private sector creating employee testing programs and so forth. In fact, a whole industry has grown up around this issue and there are people who make millions of dollars as part of the drug testing industry.

PARTICIPANT: What you are saying is that for whatever reasons, there have, in fact, been decreases in the reported use from the original survey.

DR. BRAY: Right. Let's get back to the survey side of it. At about the time the urinalysis program was launched, they decided that they wanted to go ahead with another worldwide survey. So in 1982, they had the second survey. At that point, we were selected to conduct that study. I can remember very vividly the dynamics of our initial meeting. When we went there, there were a lot of concerns. Some people in the Navy felt that maybe they weren't going to look very good on the survey. They felt that urinalysis testing was just getting launched and there was not enough time to show any positive effects. They were concerned they were going to show high rates. Anyway, the Navy didn't want to participate initially in the 1982 random study but it was managed by DoD and they required all the services to take part in the survey. The Navy voiced their objection but did support the study after DoD's imperative was made clear.

Subsequently, there have been studies done in 1985, 1988, and 1992. Now there is a study in progress for 1995. There is about a three-year cycle between each of the surveys. I am not sure that there was any vision that there would be a series of surveys taking place. However, there was some legislation that said DoD needed to be monitoring what was going on in this area of substance abuse. The survey has become a vehicle for the Department to at least have some concrete data that they could point to and say "here is where it looks like things are going up or down."

Initially, the survey series started out as principally a drug and alcohol survey. In 1980 and 1982, they were focused almost exclusively on drug and alcohol questions. In 1985, the survey started to shift just a little bit and to broaden the focus to include more on health behaviors. In 1985 there was an expansion to include questions on smoking. For example, there were some other questions added that began to look at some issues similar to those in the Alameda County study to include exercise, eating, sleeping, and other physical health practices.

PARTICIPANT: Did it include actually the whole set of the index?

DR. BRAY: It came as close as we could. We actually looked at the items from the Alameda County study in the context of the military and so it did have an eating, exercise, sleeping, --

PARTICIPANT: Questions such as, "do you eat breakfast?"

DR. BRAY: Right, those were in there. It had the substance abuse questions as well. We ended up creating a couple of different indexes associated with that; trying to parallel what they had done in that study.

PARTICIPANT: Were there social network questions, by any chance?

DR. BRAY: No, there were no questions along that line. In fact, in 1985, the title of the survey was changed from "Drug and Alcohol Abuse" to "Substance Abuse and Health Behaviors." That title was used in 1985, 1988, and again in 1992. Then in 1995 they were calling it the "DoD Survey of Health Related Behaviors," so the words, "substance abuse", do not even appear in the current title. However, there still are a good number of questions dealing with alcohol and drug use. We have actually dropped a fair number of questions because the trend lines show a very dramatic decrease over the period of these surveys; going from about 27 or 28% in 1980 down to literally about 3% in 1992. There has been a very steep decline and as a result one begins to wonder, "okay, is there anything more that can be done, is it going to go any lower than it is now?" At some point you bottom out and say, "there is always going to be some residual group there that will use drugs and alcohol. If it is always going to be there, you can't do much more than you are already doing."

PARTICIPANT: How does that compare to the national norm? Do you know?

DR. BRAY: Actually, if you look at the "National Household Survey on Drug Abuse (NHSDA)," which is a fairly comparable study, you find that the national trends are also in decline. In fact, I guess with the exception of cocaine use, 1979 was probably a year at which you saw drug use peak. The NHSDA surveys started around 1971 or 1972 and have been done sporadically every several years. In 1990, they started making that an annual survey. We can say that between 1971 and 1979 there seemed to be notable increases with things seeming to peak in 1979. There was a gradual decline after the peak year. So the military has been, I think, a beneficiary of that changing norm in part because of what they have been doing including active efforts like their urinalysis testing and drug education programs. The military can send out even a stronger message than might be received in the civilian sector.

PARTICIPANT: To what extent have the demographics of the military changed so that you are getting a different sub-sample of the general population?

DR. BRAY: That is an excellent question. What has happened, as you are all aware I am sure, is that beginning in 1973, the military went to an all volunteer force. The result of that has been that people have not cycled through the system as much as in the days of conscription. In reality what has happened since 1980 is that you have had people staying in longer. While you still had a certain amount of cycling, the military has aged, is more likely to be married, has become better educated, and has a higher proportion of women coming into the force. All of these factors are associated with less substance use. In other words, the higher risk people are less likely to be in the military. One of the things that we did to address that point was to take the data from the survey series and try to standardize the demographics back to the demographic distribution in the 1980 survey. We wanted to know how much changing demographics explain the reductions or the changes that have occurred over time. There was an interesting finding that came out of that. If you looked at drug use, you found that it really didn't explain the way they factor. There is still a very steep decline even after you did that standardization. The same thing was true for smoking. There has been a very steep decline for smoking and the adjustment for demographics didn't really alter that effect.

However, the place that did make a difference was in drinking, particularly heavy drinking. What we found is that (and this again is not too unlike what you see in the civilian sector) there has been a move or a trend towards less consumption of alcohol over a period of time. If you look from 1980 through 1992, you will find an average amount of consumption going down. You will find the number of abstainers increasing over this period of time. However, if you look at rates of heavy drinking, they have remained fairly stable. In other words, there is something going on but it seems to be going on in people who are the moderate drinkers or the non-drinkers. This heavy drinking group has seemed to remain fairly stable, though. If you look at our results before you adjust them, what you do find is that there is a decline even among the heavy drinkers.

When we adjusted for the effects of these changing demographics, we discovered much of that effect tended to wash out. In particular, we found that the heavy drinking rate in 1992 was not significantly different than it was in 1980, although in terms of the curve, it actually is. There is a little blip in which it goes up between 1980 and 1982. Rates of heavy drinking went up then, and then there is a decline that takes place since that time so you have to be a little careful with that statement. It depends on what you want to make of that increase in 1982.

One hypothesis that has been put forth is that what happened in 1982 was people were shifting from drugs to alcohol about the time urinalysis testing started. Everybody got nervous about that and so there were people changing over to drinking as a substitute drug. Maybe that is a reflection of something that was going on with all the attention that was being given to drugs and drug use at that particular point in time.

Actually, I brought a copy of an article that I can leave with you that just came out in "Armed Forces and Society" that is an attempt to look at the trends. One of the things we did was to try to line up the whole survey series. We do some of that in the report but there are a few unique things in here. This particular graph will give you an idea of the declines that have taken place. This top line is smoking. It was at about 51% in 1980 and has declined down to about 35% in 1992. A pretty impressive, steady decline has been going on there.

Drug use is the dark line coming down here. They were at about 28% in 1980 and now are down to a little over 3% in 1992. The real big drops happening between 1980 and 1985 are now starting to taper off. That is what you would expect, a little asymptote to show up on a curve like that. The middle line here is the heavy drinking so you could see a heavy increase. If you try to draw a line through that, you don't see a lot of variation around that line and even less variation than when you do that adjustment for demographics. It has the effect of pushing these two points up more so. It becomes even a flatter line going through there.

PARTICIPANT: Is heavy alcohol use defined completely in terms of quantity or frequency, and not in terms of problems experienced?

DR. BRAY: Right, this is defined as people basically having five or more drinks at least once a week. We gathered the data over the course of the past 30 days.

PARTICIPANT: Drinks of --

DR. BRAY: Any alcohol, basically. Beer, wine and liquor are the three things we asked about specifically. We asked them about their quantity and their frequency of use of those three beverages and then we build those into a drinking levels index. It includes abstainers, light drinkers, moderate-heavy and heavy.

PARTICIPANT: Do you have data regarding when they drink and how much? I think the Alameda County is divided like that. It asks how many drinks over the week but then it asks for the given time when they are drinking and how many drinks.

DR. BRAY: These measures ask them to indicate when they drink and how much, on the average, they drink; one drink, two drinks? It is beverage-specific in this case. You know, one beer, two beers. It also asks them what size of container they drink from; for example, a can of beer or a shot of liquor? From that, a calculation of the likely alcohol content in the various drinks is done and then put into a quantity frequency index where we can come up with some indicators. That is not to say that this doesn't have any error in it. All these measures do.

PARTICIPANT: It is basically based on the amount of alcohol consumed, not on the number of drinks so there is a relationship between beer and wine and liquor.

DR. BRAY: Right. So we do take into account that each of those beverages have varying amounts of alcohol.

PARTICIPANT: What about the men versus women issue?

DR. BRAY: This is a really interesting issue. We have not done extensive analyses of women. They have been in the background in a lot of analyses because, largely, the military has been thought of as a male organization. The focus in most of our analysis has been on service-related or pay grade-related breakdowns. We have broken out some demographics and included male/female cuts in those data. When you look at heavy alcohol use (we can look at any illicit drug use and also smoking) it is very clear that the women are much less likely to drink heavily than the men. For example, in 1980, 22% of the men reported heavy drinking compared to about 10% of the women. In 1992, there was an even bigger disparity. Seventeen percent of the men said they were drinking heavily compared to 4% of the women. That is not too surprising. What you find is that women who use alcohol are more likely to use it in smaller amounts and to not get involved in the real heavy drinking that men do. This is something that is pretty constant in the civilian surveys, too, when you look at alcohol use. Women just don't drink as much as men do.

If you look at the civilian surveys of drug use and smoking, you also see similar patterns. Women are less likely to use drugs and less likely to smoke. In the military, we found a somewhat different pattern on those two. In particular for any illicit drug use, men and women have been using at very comparable rates with the exception of the 1992 survey. In fact, there was no significant difference between the rates of men and women from 1980 through 1988. Just to give you some numbers here, in 1980 the estimate for men was 36.5%. These numbers are higher than those numbers I was giving you a minute ago because that was talking about past month use and this is the past year. Anyway, 37% of the men and 39% of the women reported any illicit drug use in the past year. In 1985, it was 13.5% for men; 12% for women. In 1988, it was 9% for men and 8.4% for women. In 1992, there was a significant difference although I am not sure if it is enough of a difference to get too excited about. It was about 7% for men and roughly 3.5% for women. That was the first time we picked up a significant difference in male/female drug use.

Now, this might suggest something about a point that we were talking about earlier, that maybe there is an environment that is doing some things to foster the drug use. You see something similar to this in smoking. The rates of use have been a bit lower by women but surprisingly close to those by men. In 1980, the men were at 52% and the women were at 44%. In 1985, they were dead-even at 46%. In 1988, they were not significantly different. The men were at 41%, the women at 40% and now in 1992, the women seemed to be dropping a bit more. The men are at 36% and the women are at 32%. So, it is still fairly close, though. What is kind of interesting is it makes you wonder whether there is something about the environment or something about the selection process of the type of women who choose to go into the military; is there an inclination towards those kind of behaviors?

PARTICIPANT: These women at this time would be children of Vietnam vets. In other words, right around 1992, they would be about that age.

PARTICIPANT: You don't have any way of estimating such as asking them when they started smoking?

DR. BRAY: Actually, we do ask some questions about first use.

PARTICIPANT: The reason I was asking the question is that at one point the population peak in the United States that was increasing in smoking was young women. I don't know if that is still true or not. I think it is because they are still trying to market all those cigarettes, targeting women. If that kind of population is coming in, it would be interesting if you had incidence data to know whether or not that need started or stopped.

DR. BRAY: I don't know how it applies to the women or not but there is some work that has been done in the Navy out at the Naval Health Research Center in San Diego. They attempted to look at whether or not people were starting to smoke after they came in relative to whether they were smokers when they did come in. In fact, a conclusion was reached that the Navy, at least, seemed to be growing smokers. In fact, there seemed to be something about the culture and the lifestyle that was encouraging them to start smoking once they came into the Navy.

PARTICIPANT: In the Army, that certainly has not been true. Long ago, they all had a smoke break. If you want to be a squad leader, --

DR. BRAY: "Smoke 'em if you got 'em." Yes.

PARTICIPANT: They used to have little four-packs of cigarettes in the C-ration packs. In some cases, the only way you could get a break was to get a smoking break.

DR. BRAY: There has been an image that the military has conveyed to the macho man that you smoke and you drink and so forth. I don't know that other drugs have been a part of that image but certainly smoking and drinking have been the tough, macho guy image; certainly through the 1940's and 1950's that was a very prevalent notion. It has been interesting that the military has not sent the same message about drinking that they have sent about illicit drug use. It is part of a culture that the large majority of people are involved in to some degree and while people are willing to say we have to teach responsible drinking and so forth, they have not been willing to take it on as a challenge in the same way that they took on drug use as a challenge.

PARTICIPANT: The question is always what sells in Dubuque. If it sells in Dubuque, it will sell in the military. It if doesn't sell in Dubuque, it won't.

DR. BRAY: There have been some very interesting countervailing forces that have existed, too. It may be true in other states, but I know overseas, in particular, when we have talked to some people in connection with doing these studies we found that the clubs are set up to be independently financed. They survive largely by selling alcohol. They are motivated to disburse a lot of drinks. On the one hand you have them saying we need to sell cheap drinks and let's make it easy for them to drink. On the other hand, you have people on the health side worrying about the issues of performance and readiness and so forth. It is not likely that they have been in the same room talking to each other. They have very different agendas.

PARTICIPANT: Those are like the NCO (Non-commissioned Officer) clubs?

DR. BRAY: Yes, exactly. The Officers' Clubs and NCO Clubs.

PARTICIPANT: How did men's and women's rates of illicit drugs and smoking compare with the nation? Were they demographically adjusted?

DR. BRAY: Let's see. This shows demographically adjusted. In the report we did an adjustment. We were able to take the data from the household surveys and we compared those with the military survey. Essentially, what we did in those comparisons was to try to subset the military down to comparable civilian people. We basically made it a CONUS-based (Continental United States) comparison since the National Household Survey was a U.S.-based survey. We then adjusted it for age. The military pretty much tops out at about age 55. There are not a lot of people that are older than that. What we did then was to subset the National Household Survey down to ages 18 to 55 and then we adjusted for the military. I looked at a subset of the military that were in the United States and comparable. We tried to basically equate the two data sets as much as we could and then we ended up standardizing the civilian data to look like the demographics of the military. Basically, the military is a much younger, much more male organization. So then we shifted those demographics and said, "okay, after you make those adjustments then what do you end up with in terms of the comparison of the data?"

PARTICIPANT: And that included adjusting for education and employment status?

DR. BRAY: Yes, however, we didn't include employment. What we included was age, race, sex, and education.

PARTICIPANT: It says here marital status.

DR. BRAY: Which one are you looking at?

PARTICIPANT: Actually, 411 and 412. I just turned to that because that is what you have.

DR. BRAY: Okay, that was just adjusting within the military. You want to look to page 432.

PARTICIPANT: Right, yes, I was referring to table 411. It does say marital status in the footnote.

DR. BRAY: Marital status is there. So we had sex, age, education rate, ethnicity, and marital status that we adjusted for.

PARTICIPANT: It is an interesting issue. Many studies don't adjust for employment and although education gets close to that, I think it probably is a very significant variable. We ran into it most recently on studies that were being done on providing health care and developing models for what should be effective over a mix of providers, and what are the expected rates of illness and what becomes a significant issue? You can be high school educated, the same age, and so on, but not employed.

DR. BRAY: Actually, we are trying to do a more thorough analysis of that in which we are trying to take into account that very thing. We wanted to look at the subset down to the civilian employee population since everyone in the military is regarded as employed.

PARTICIPANT: Particularly when we have that issue come up. In fact, you have touted around the issue of studying spouses. I think it is a critical issue because we are trying to compare across control groups of spouses and, in fact, we found differences in the study.

DR. BRAY: Well, these particular comparisons don't make that adjustment for employment. If you wanted to characterize the differences, what we have found is that the military members are much less likely, or at least significantly less likely, to use illicit drugs than civilians.

PARTICIPANT: Is this true for men and women?

DR. BRAY: I would have to kind of walk through those one by one. There are some differences but overall you find there is less drug use among the military and that there is more smoking and more heavy drinking. Let's go through those by male and female because you find some differences and there are age differences, too.

If you look at heavy drinking between males and females, you find the effect is really accounted for primarily by the males. In other words, the same thing we were talking about before. The women are not as likely to drink heavily. For example, overall we find that for men, there were about 16% in the military who were heavy drinkers versus about 11% among the civilians. For women it was 4% military, 3.5% civilian so they had no real difference in the heavy drinking rates.

Where you do see a difference though is that there is a lower rate of abstainers among military women. More specifically, 47% of the civilians said they abstained compared to 32% military.

PARTICIPANT: Could that be a function somewhat of pregnancy?

DR. BRAY: I am not sure of the relationship to pregnancy. I think it is probably broader than that. When the women are drinking in the military, they say they are drinking at the infrequent, light or the moderate heavy levels. We have 64% of military women who say they are drinking at that level compared to about 50% of civilian women. There is no difference for the heavy drinkers.

You see a similar pattern for the men. They are just more likely to drink overall. For example, if you look at the abstainer rates, you have 32% of civilian men who abstained compared to only about 20% of military men. About 58% of civilians drink at that infrequent line or moderate heavy compared to 64% of the military. Then 10% of civilians or 11% say they are heavy drinkers compared to 16% of the DoD.

PARTICIPANT: And on the smoking issue?

DR. BRAY: Smoking is really an interesting issue. I can show you a picture here. Here you get a quick idea of it. What you see is that the military is the darker black, the solid line. The military is smoking. There is a pattern there for higher rates all the way through in the military but the gaps are huge at this point. They are starting to come together.

The female differences are not significant but the male ones are. Part of that is that the males are clearly driving the totals. What is interesting is that you don't see any difference for smoking between the military and civilian rates even though the patterns suggest that there might be something happening.

When we look at heavy smoking, (that is, a pack or more a day) we find that there is a significant difference for the military women, who are higher than the civilian women. It is about 18% of the military women versus about 12% of the civilian who are smoking a pack or more a day. That is down on page 631. That was kind of a surprising finding. In fact, it is just the opposite. You don't see any difference for the males. The military and civilians males are pretty much dead even right at 16 to 16.5% for the pack or more a day. The females are smoking more heavily in the military than among the civilian people.

Now, this is a comparison with the 1992 data. We are in the process of trying to look at these trends across the whole set of surveys from 1980 through 1992. We are also looking at the military-civilian trends throughout that sequence. I don't really have anything available to tell you on that today but we hope to have something here within the next couple months about those trends.

PARTICIPANT: Can you tell anything between deployment, being deployed versus not? In other words, over the span of years, there must have been a percentage of the people responding to this that were deployed and away from home versus not.

DR. BRAY: Interestingly, that is one of those things that has not really been looked at but one that I alluded to earlier in our proposal. We are proposing to look at that very thing. Let's take a quick look at the drug use between the military and civilian. That is back on 525. What we find here is substantial differences between both men and women. Both of them in the military are significantly lower than they are in the civilian sectors. For the men, if you look overall, civilians are using at the rate of about 10.1% versus 3.6 for the military men. Military women are at 2.1% compared to civilian women at 8.3%. Regardless of where you look, the differences are there.

The differences are bigger if you look at the younger age group. The 18 to 25 year olds typically are a pretty high risk group for using all these substances. That age group is kind of an experimenting group but in the 18 to 25 range you will see bigger gaps. For the civilian women, for example, 12.2% use compared to 2.7% for the military. For the men, 15.4% of civilians use versus about 7% of military.

PARTICIPANT: Women in the military are less likely to be heavy drinkers. However, they are equivalent to those in the civilian population so that the issues involved there (if we were wanting to explore that) become not a military-specific issue but a broader-based issue of why are women drinkers different than men. There is no evidence from that piece of data about a unique contribution of DoD to that particular finding.

One of the things I am trying to get to is on the suicide issue. The rates of suicide in the military among men are in fact lower compared to a demographically matched population, but we don't find that in women. The phrase that is used, which is a gross generalization that captures the idea, is there is a bias of protective effect within the DoD which operates on men but doesn't operate on women. That phrase is totally wrong because, who knows whether this is true? There are other types of selection biases as well so it doesn't have to be a process but it captures the idea.

The idea that I am trying to look at here is whether there is a complex sensitivity element or a group of facts within the package driving the differential in the two populations. That is why we are walking through this to see if anything you mentioned, in fact, indicated the potential of such an effect.

PARTICIPANT: I think this whole issue is an interesting one. It is sort of a microcosm of one they deal with all the time in behavioral genetics; that is, to the extent that you do see civilian-military differences, you ask the question which we are asking over and over again. Is it either a self or internally imposed selection process or is it something about the military environment? You are correcting for demographics or important demographic variables but it would be interesting to know to what extent you see different distributions of personality variables in the military as opposed to civilian population; personality variables specifically that are known to be related to alcohol or drug use. Again it is the question of are we looking at a different set of mechanisms in individuals or if you match the military population to the civilian is there something about the military environment that would either increase or decrease drug use?

PARTICIPANT: Right, I am thinking here about what kinds of questions could be asked to answer that question because I think it is an interesting one.

DR. BRAY: Unfortunately, none of these data have any kind of personality measures that would be nice to have as additional background.

PARTICIPANT: My clinical training leads me to think personality-wise but my military training leads me to think broad, macro scale. I also think of the issues of economics in terms of what drives behaviors which we can take down to reinforcement issues, perhaps. There is a question of whether there is actually an effect on a community in which smoking is subsidized? Is there an effect in which drinking is subsidized in terms of costs? One of the questions you have here clearly is that we have subsidized smoking for long periods of time. People have raised that as an issue of whether it leads to increased rates of smoking. Well, we can give them away free, of course, but perhaps at some levels it doesn't make any difference whether we make a certain economic cut in cost. Make it free and you will increase smoking. Make it expensive and no one will do it. In between, it is a tough call. The more interesting question might be differential effects in men and women of that kind of issue. That can be thought of as a reinforcement contingency or as economic availability or as group climate. Each one of those brings a different theory to bear on how one would address that question.

PARTICIPANT: The interesting question there would be, "is there a difference between men and women, between whether or not it is a selection of fact versus environment?" I don't know, but you might think that you would feel more of the selection of fact in women. The women might end up showing that and the men might not.

PARTICIPANT: There is also not only one DoD culture. Looking at the numbers, it is very striking that the usage rates differ. They are maybe not statistically significant but they are meaningful between the services. In addition, the selection factors are different for the services. The Air Force gets a much higher quality. In addition, there is almost a built-in laboratory with the services. I think it is dangerous to just talk about DoD when you have these kind of numbers.

DR. BRAY: That is really a good point, and the upcoming award that we received, I guess which is maybe somewhat parallel to --

PARTICIPANT: Yes, I assume it is a BAA award.

DR. BRAY: Right.

PARTICIPANT: I know Bill had one.

DR. BRAY: Kathleen Jordan. Is that the one on stress?

PARTICIPANT: Yes. We chatted some about that.

DR. BRAY: They haven't heard anything on that which is a little surprising because they said that they sent out all the letters but they still haven't received it.

PARTICIPANT: They, in fact, just sent out the letters on breast cancer which was about four months before all of the Women's Health issues.

DR. BRAY: Well, in any event, one of the things that we were proposing to do with these data under the Women's Health announcement is, in fact, to try to dig into the issues of some of what you raised here; but these data have really been under-analyzed for women. We have run out a few of these things on the substance use but there is a lot more in there. In particular, what we are hoping to be able to get into are some comparisons that will look not only at military-civilian but also would be able to look at the inter-service differences that you were just raising. I expect, for example, that among women who go into the Marines, there might be a significant selection factor. There may be that for all the services.

PARTICIPANT: Well, clearly different.

DR. BRAY: We are hoping we can look at this deployed, non-deployed issue and explore that more. We are planning to look at the officer/enlisted kinds of differences for women and I feel fairly sure there will be some notable things there because it is almost like you have an SES (socio-economic status) factor that exists between the two of them. You are going to have education differences, perhaps different motivations and so forth there. I guess that is the main thing. We will also be doing some more male/female kinds of comparisons in what we are looking at as well. One of the things that is kind of exciting about the upcoming survey is the focus on some of the "Healthy People 2000" objectives.

In particular, I am not sure who did this analysis, but someone sat down and tried to take "Healthy People 2000" and look at it from a military perspective and say, "which of these objectives seem most relevant to the military?" It is something they tried to pare down. Then they took another step and said, "okay, which of these things might be looked at in survey context?" They came up with about 15 things to be examined that way. What we are trying to do in the 1995 survey is look at a number of those objectives. We will then compare those with the civilian counterpart data. We might take data from the "National Health Interview Survey" as well. We will then try to provide a benchmark for the DoD to begin to monitor these things over the next few years.

One of the things that we have done for the first time ever in the 1995 survey is include a couple of pages in the questionnaire that are exclusively for women focusing on women's health issues, access to care, and experiences during pregnancy. I brought a draft copy along. This is an approved copy of what is about to get printed. For women, it asks questions about access to OB-GYN care and when did they last receive it; that sort of thing. You might be interested in this one about, "how much stress did you experience as a woman in the military?" We heard at our pretest that women think it is a fairly stressful place to be, particularly of late since there has been so much happening with the draw-down. The number of women has been increasing in the military of late and I don't think those proportions have been changed as a result of the draw-down. I think there is still probably the same proportion staying in the service.

PARTICIPANT: Did you ask the women the amount of stress that they link up with being a woman or just the amount of stress? In other words, there are two ways you can ask that.

DR. BRAY: That is right. In fact, we have tried to ask it both ways. We are asking two or three questions. One is, "how much stress do you experience in your job?" We also ask, "how much stress do you experience from family?" Then we ask "how much stress do you experience as a woman in the military?" We heard women telling us (these were just some debriefings we did with people after they filled out the questionnaire) that those who had experience in going through a pregnancy while they were in the military felt a lot of resentment from men during the time they were pregnant. This was because they were viewed as not being able to do their job. It appeared or was perceived that somebody else had to pick up the slack while they were pregnant and that was creating some animosity towards the women.

PARTICIPANT: In a way, that might be there anyhow, like "oh, can the women do as much as we can?" but then if they are pregnant it is worse.

DR. BRAY: It makes it salient. Then we ask some other things here about their substance abuse.

PARTICIPANT: That might well be related to the services. It certainly will be job specific, working in the motor pool versus if you are working in personnel.

DR. BRAY: One thing that your comment about contacts just brought to mind is that we tried to gather data about the kinds of jobs they worked. This was kind of complicated because it was not our main point. Getting enough people to fit into all these job classes was a little bit difficult but we were able to classify them into about 10 different broad groups. One of the things we did then was to try to look at the relationships between substance use and the kind of job they were doing. One of the things that jumped out is a kind of surprising finding (maybe it was only surprising to me). We found that people in the health care settings were actually more likely to report illicit drug use than some of the other jobs were.

Maybe this has to do again with the context effect in which there is access and availability of the substances. I guess in my naive way of thinking, I pre-supposed that these highly trained professionals administering, doing good, and helping other people and so forth would not be the drug users. Certainly your drug users will be all these guys out here in the trenches, your infantrymen and so on.

PARTICIPANT: Do you look at all the influence of the media, in particular some of the TV shows? Do we ask any questions about them? As you were talking I started thinking about M*A*S*H.

PARTICIPANT: Do you ask any questions on family history at all?

DR. BRAY: No.

PARTICIPANT: That is probably the best predictor of anything. You have the opportunity of looking at a subset of the population that was at greater risk and those who weren't and to see if the military members are different.

DR. BRAY: We do ask some questions like did you smoke before you came into the military but nothing about --

PARTICIPANT: That will raise some issues of clearance, getting that kind of question through. I don't see any reason why it can't be met but the usual question that you ask these people always raises flags in a survey.

PARTICIPANT: There are a lot of family history studies out there in the civilian population and generally you don't ask, "do you have a parent who is alcoholic?" You generally ask a whole set of questions. Essentially you don't leave them the option of making the diagnosis.

PARTICIPANT: That is a health context survey so it is a little more expected. The author of the study was looking at an HMO that was not specifically substance abuse directed but was health maintenance organizations directed.

PARTICIPANT: You are talking more about a broad survey.

PARTICIPANT: It would actually be worthwhile to do some pilot data. If you have only two questions, what are the best two to ask in that area? There has to be a similar question that could at least result in a sufficient amount of variance to serve as an index.

PARTICIPANT: There is the whole issue of family disruptions, alcoholism, and domestic violence.

DR. BRAY: In fact, when I have talked to some people about these data before, there is this whole issue of if they are drinking, what about the family situation? Are the families drinking?

PARTICIPANT: I am working on a current study on military cases of medical discharges. We look at the relationship between families and whether that person had an alcohol problem or alcoholic diagnosis. That is a limit, itself.

PARTICIPANT: To what extent in terms of survey development does the DoD dictate the content of questions.

DR. BRAY: They do to some extent.

PARTICIPANT: As in NIMH's study on animal and sexual behaviors?

PARTICIPANT: Do they still do the survey on high school seniors?

DR. BRAY: Yes.

PARTICIPANT: Turning to our focus for a moment, are there any other elements in particular in areas of public behavior around gender differences that captured your attention? One way to phrase the question is what would be the perfect RFP (Request for Proposal) that in fact addressed those gender differences that has some probability of showing differences for morbidity and mortality in health?

DR. BRAY: I am going to have to plead ignorance on that because there has been so little analysis done on the male/female differences. We are hoping with our current grant that we will be able to actually dig into that. I should be able to answer that for you much better a year from now but right now about all we know about male/female differences I have told you.

PARTICIPANT: What about health care utilization?

DR. BRAY: We have some questions in there that we will be able to sample in the 1992 survey and there will be a few in the 1995 survey. That has not been of any interest to DoD so those analyses just were never part of any major routines that were done. They have been much more interested in the service kinds of differences that were there and looking at some of the demographic differences.

You raise a very good question. What can be done? One of the things that is a little frustrating about the way the series has gone is that I think it has been, in some ways, a little bit of an unplanned series. Part of that is a function of military life. People don't stay around long enough to see these things play out so even though we have been involved with the series since 1982, we have never had the same project officer from the DoD side twice in a row. It has been a different person every time. Even more frustrating is that there was the opportunity to have the same person who did the 1992 survey but he is no longer with DoD. The person who wrote the RFP is not involved in monitoring the survey and the person who is monitoring it had it handed to him as an assignment. They said, "this is yours, do it".

The level of investment and interest in the route to understanding the issues and trying to plot the direction and think about what should be included next time is very sporadic and helter skelter. To give you a feel, I think the last two surveys have been handled much better than the previous ones in the sense of making efforts to try to get input from the services. Essentially the way this gets staffed at the DoD level is you have a DoD project officer and then there is a representative appointed from each of the services.

PARTICIPANT: Perhaps I could interrupt for a moment so we could close this session. I think we can move into informal discussion at this point.

Physical Fitness and Training: Strength and Gender Differences

James A. Vogel, Ph.D.

We are pleased to have Dr. James Vogel with us today. Our group is interested in gender effects on health, in the broad perspective, and particularly questions of stress on various forms of health; physical stress as well as psychological stress. We are inviting people to help us think from different perspectives about this. We are most interested in people talking about what they know and what they are interested in. Then, we join in and think through whether or not there is some applicability to our interests. Your name came highly recommended as someone we should hear from who would be helpful to us in thinking through some of these issues.

The topic for today is "Physical Fitness Training, Strength and Gender Differences." This will offer us the opportunity to think from a new perspective that we haven't looked at before. I imagine there will be a few other people joining us as time goes on. Perhaps we can go around the table with introductions ending up with Dr. Vogel. Then Dr. Vogel, perhaps you can start by telling us a bit about your background as this might help us know how best to phrase our questions to you.

I am Dr. Bob Ursano, Professor and Chairman of Psychiatry here at the university.

DR. GABBAY: I am Francie Gabbay, an Assistant Professor in the Department of Medical and Clinical Psychology.

DR. TILLMAN: I am Johnnie Tillman, Assistant Professor in the Department of Military Emergency Medicine.

DR. STRETCH: I am Bob Stretch, a Research Assistant Professor of Psychiatry at the University.

MS. LEVINSON: I am Cathy Levinson, a Clinical Social Worker in the Department of Psychiatry.

DR. URSANO: This is Dr. Carol Fullerton just walking in. She is a Research Associate Professor here in the Department of Psychiatry.

DR. VOGEL: I am Jim Vogel. I will begin by telling you a little bit about how I got into the type of work that I have been doing. I was originally trained in cardiovascular physiology. As I entered the Medical R&D Command, most of the application in cardiovascular physiology was in exercise performance, originally working in high altitude physiology and medicine. Responsibilities there directed me toward physical exercise performance in high altitude.

Over a number of years, I felt that the Army was probably going to get out of the high altitude business but it never has. Gradually, I moved more into pure exercise physiology and physical fitness. Around 1975, at the Institute of Environmental Medicine we were looking at physical training and physical fitness as a way of protecting against environmental extremes, particularly heat and cold. We perceived a need within the Army to look at issues of physical training or physical fitness per se. We asked the Army Surgeon General in 1975 to add that to our mission area, and that was granted.

Soon after, we began to receive inquiries from the Army Deputy Chief of Staff of Personnel, and from our Army Doctrine Command to look at the issue of gender differences in physical fitness, as well as the issues of physical requirements, and gender-neutral or gender-free physical requirements for army occupations.

We began that research in two areas in the late 1970's. One was to develop a taxonomy of physical requirements for Army occupations, and, later on, as a second phase (working with the military enlistment procurement command and the recruiting command) develop physical screening tests for these requirements. This would enable us to match individual capabilities at the time of recruitment and enlistment with the demands of the occupational specialties.

That, by and large, was never implemented. This was around 1980. I think it was a little bit before its time. When the Army examined our research and our recommendations, they felt that they really couldn't live with such a system of women meeting the same job requirements and occupational requirements as the men. It would have ruled out women entering a lot of MOS's (Military Occupational Specialty) at that time.

In the late 1980's, we worked with them again and made modifications. An enlistment physical screening test was implemented. It was called MEPSCT; the Air Force still uses it. The Army used it for about five years. This was a lifting test only. It is what is called a Military Entrance Physical Strength Capacity Test. It is strictly a lifting test with a weight machine. The Army used it for about five years and then abandoned it, feeling that they couldn't demonstrate that it was useful. It was used only in an advisory mode of asking women and men to pass these lifting requirements. If the person, the enlistee, was choosing a demanding occupation, and showed a low score on the the strength lifting test, then they were advised that they could potentially have a problem; but it was not binding. In the case of the Air Force, it is a binding test, and they continue to use it to this day. In other words, there are certain lifting requirements at the MEP station that they must pass before they can qualify for certain military occupations.

If you wait long enough, everything sort of comes back. I am working with our Training and Doctrine Command (TRADOC) in the Office of the Deputy Chief of Staff for Personnel again, to develop such a system. I think this time it is going to work. We will develop gender-free standards for all Army occupations and qualifying tests at the time of enlistment. It is in the review phase and I am right in the middle of a series of high level briefings; one, two, and three-star briefings, and hopefully it will be finalized soon.

Along with this, in the last 10 years, we have been looking at gender differences in physical fitness and physical training responses. We have developed quite a large database on the physical performance responses and physical fitness differences of women. More recently, we have been looking at how women handle heavy physical tasks such as load carriage, repetitive lifting and manual material handling. We have covered pretty much the whole area of physical performance, physical fitness, and physical training of women in the military.

DR. GABBAY: I have a question regarding the system that you are developing, where, I forget the terminology you used, but you are classifying each position with regard to the physical requirements. We have been told recently by a number of different people that, increasingly, the number of positions in the various services that require a great deal of physical strength are becoming more and more limited. Is that your impression?

DR. VOGEL: Well, we are evolving to that. Several years ago the Army did a study where they developed a listing of all physical tasks for every MOS in the Army, with the critical and most demanding physical tasks. As part of our study, we went back to every component school to verify this. This particular MOS is an armor crewman. Now, that happens to be closed to women. The most critical tasks of lifting and carrying and climbing are listed here.

DR. URSANO: Do you list the amount that they would have to lift by MOS?

DR. VOGEL: Yes. What we are trying to do is go back and make these as descriptive as possible in terms of distances and actual weights and so on. I have compiled our own research efforts out of the database, which lists the critical material.

Getting back to your question, I think some of the schools have been accused of altering some of these tasks in order to keep women out, to avoid having women qualify. That may have been the case a number of years ago. I don't think that is happening now. There are really many MOS's that were originally classified as being very heavy or heavy. This was a Department of Labor classification that was used several years ago when this list was compiled. That is not changing. There remain (I can't tell you exactly how many) jobs considered either heavy or very heavy in their nature; it is still a large number.

DR. URSANO: For example, what kind of jobs?

DR. VOGEL: A lot of the combat engineering jobs, quartermaster jobs, armor, artillery, and infantry.

DR. URSANO: When you say heavy, just so we can have a frame of reference, what does that mean?

DR. VOGEL: Lifting 75 or 100 pounds and carrying it some distance.

DR. TILLMAN: How about repetitive lifting for a period of time? One of the questions and concerns that I always had in the military is that we never trained conditioning to the job that the person was going to. A field artillery man who is going to be lifting a 75-pound round shell repeatedly over time needs a lot of upper body strength that we sometimes don't develop.

DR. VOGEL: That is one of the major objectives of this new research effort that we are about to start. I am working with the physical fitness school and TRADOC to develop new physical training guidance to try to meet those standards. Right now the Army physical training manuals and programs are not aligned toward occupational needs. They are just general training programs.

DR. TILLMAN: They have some specifics outlined in there but it doesn't go toward the occupation.

DR. VOGEL: Yes, it really doesn't go toward occupation. The fitness school has, in fact, already developed some specific guidance in that.

DR. TILLMAN: There has to be a paradigm shift.

DR. VOGEL: Yes.

DR. TILLMAN: Right now, all those commanders out there believe that everybody is not within two standard deviations from the mean. Rather, they fall within the 2.5% that is at the head of the bell curve. They want everybody, the whole unit, to be able to run together at the same speed, for the most part, and do the same number and kinds of push-ups and sit-ups and those types of things.

DR. VOGEL: It is a paradigm shift. That is why next Wednesday I am speaking to all the Assistant Commandants of the schools, one stars, just to go through this plan and this program.

DR. URSANO: When you say paradigm shift, what do you mean?

DR. VOGEL: A different way of thinking about how physical training should be focused; their purpose and criteria. Physical training in the Army right now, is for the purpose of developing a general baseline level of fitness and it is not geared toward the soldier doing his job. That responsibility is given to the unit commander. One of the things this will lead to is giving that guidance regarding fitness and occupation in a more formal and structured way to the unit commander.

DR. URSANO: So you might, in theory, have someone in armor who not only has to meet a requirement of running a mile-and-a-half, but he has to, two or three times a year, be able to lift 75 pounds and carry it 20 feet?

DR. VOGEL: Yes, the APFT, the Army Physical Fitness Test, will always be there. It is standard, across the Army, regardless of occupations, and it will be entirely separate from a new standard. The new standard will probably be an entrance standard when a person is assigned to his first unit; the person will go through basic training and then have skilled or Advanced Individual Training (AIT), as we call it in the Army.

At the end of AIT, when they are ready to go to their first unit assignment, they will have to pass a qualifying test or event for their occupation rather than a physical fitness type of test, such as push-ups, sit-ups or runs. They will actually have to pass a standardized or generic physical task. They will have physical tasks that will be similar in nature to the actual tasks that their occupation requires. That is what we are proposing and developing.

DR. URSANO: So, it is really at the entrance to the job that the requirements become the most important.

DR. VOGEL: That is our proposal, and I think it will be accepted.

DR. URSANO: What if someone falls below ability later on, either by lack of conditioning or injury or whatever?

DR. VOGEL: Well, we haven't really resolved that issue. I guess it is one step at a time. There are also concerns about people not passing their qualifying physical after we have already invested two weeks of basic training to a couple of months of advanced individual training in them, as well as skill training. That involves some tough decisions about re-assignment and re-training. That personnel management problem hasn't really been resolved.

DR. TILLMAN: It is not a new issue. When I was a staff physician at Fort Sill, people came through for the basic field artillery course and then went on into AIT. In the course of a year we would have three or four people who would come through who couldn't pass the PT (Physical Training) test.

DR. VOGEL: What do you mean by PT test?

DR. TILLMAN: The man who couldn't do the push-ups. One man came in who had no muscle mass at all. In fact, I thought we ought to work him up for a muscular dystrophy type of disorder. That is an issue that the Army had to deal with. Probably with this type of person they could look at re-classifying him, at least; if he couldn't do that skill, he could probably do some others.

DR. VOGEL: That is a decision that leads to expense. There certainly would be people within the training command that are reluctant to establish such a system that is going to cause that kind of expense. I think we are to the point where we have to do something. There is a mis-match of people between job demands and their personal individual physical capability that is really becoming a problem. Certainly in the down-sizing army, it has to be dealt with.

DR. STRETCH: Will there be any attempt to conduct these tests under different conditions that might normally be faced in the field, such as under mock war?

DR. VOGEL: Well, there is some talk about that. We really haven't gotten to the point where they are fairly specific to the job. If you are looking at some jobs which require lifting, twisting and lowering down, there is a question of whether we want a few very standardized tests to use across the army, or whether to try to customize them. The trend generally is to try to keep it simple and standardized. That is something that we are addressing at the moment and I am trying to get feedback from TRADOC headquarters and from the schools on this. We really haven't made a decision.

From my experience, we probably need to keep it fairly generic rather than specific to try to identify fairly large mis-matches of the weak people or low fitness people. Training programs will take care of part of the problem. We know about how much we can train women and men soldiers. A lot of time the gaps between individual capability and the job requirements are far more than training can handle.

DR. URSANO: Is there a ballpark figure for men and for women, regarding training them to lift X amount?

DR. VOGEL: We have a fair amount of data on that and it is kind of specific to the muscle group or the type of lift. It is probably generally in the area of 15 to 20%.

DR. URSANO: Increase?

DR. VOGEL: Yes. What makes it a little bit tricky to predict accurately is where the person is to begin with. The response to training is a function of where they are in relationship to their potential. In fact, during basic combat training, we often see women showing slightly larger gains than men, because men are sometimes closer to their potential than women.

DR. URSANO: So, it is a curve, and where you are on the curve depends on what increment you can get.

DR. VOGEL: Exactly. But typically, during basic training, we see a 10 to 15% gain in both strength and the aerobic fitness response; especially for women. In basic training, women are integrated with men at Fort Jackson and women are showing even better training responses because of the challenge of the physical training program.

DR. URSANO: What about their injury rates?

DR. VOGEL: That is, of course, the cost that we are dealing with, especially in women. Again, we have quite a large database, particularly during basic training. Most lower extremity injuries, or training-related injuries, are about double for women as opposed to men.

DR. TILLMAN: Primarily the lower extremities?

DR. VOGEL: Yes.

DR. TILLMAN: The Army changed the fat requirements (not requirements but upper limits) for women in the last year or so. I don't think that it has been officially published in documents yet, but I know that all the people are going by it. The findings were (and I am sure that you all had something to do with this) that women who had a higher percentage of fat ended up having more strength and more endurance. Can you speak to that?

DR. VOGEL: That is our research.

DR. URSANO: Could you say some more about that?

DR. VOGEL: Yes. What I omitted at the beginning is that in all this work there has been a lot of research by us in body composition and its relationship to physical performance. One of the more interesting findings is that women who entered the service and, during basic training, actually exceed the height/weight standards, perform physically better than the ones that passed. That is simply because the heavier women tend to have more muscle mass, more of what we call fat-free mass. That makes them better performers at physical tasks. What we are doing, by just height/weight applications, is excluding a lot of women with more muscle mass. If we submit those women to a body fat test, so that we can distinguish between over-fat versus over-muscular, we would keep a lot of those women in the service. That is, of course, going on now. That was one of the reasons that we made the body fat standards and the height/weight standards a little more liberal. We thought it brought it in line with performance, and the physical fitness tests and performance in general.

DR. URSANO: Body fat does not determine --

DR. TILLMAN: The measurements, no.

DR. VOGEL: In the field we developed anthropometric, actual girth measurements. We used to use skin folds. A few years ago we replaced it with circumference measurements. In women there are four circumference measurements and for men there are two circumference measurements.

DR. URSANO: What is it for each?

DR. VOGEL: For men it is neck and waist. In women, let's see if I can remember, it is the waist, hips and wrist.

DR. TILLMAN: The wrist because the wrist is supposed to be the lean area. The neck is also a lean area.

DR. VOGEL: The neck is also used in women.

DR. TILLMAN: The neck is used in women as well?

DR. VOGEL: In men, it is just the neck and waist.

DR. TILLMAN: If you gain weight, you don't gain a lot of weight in your neck and wrist, you gain weight in other areas.

DR. URSANO: When you have to get a new neck size, that is when you know you are in trouble. In fact, people do try to get around it by doing neck training exercises. I think one of the things, in listening to your descriptions, that is very helpful is to hear these issues addressed in a setting that has examined similar issues already. There are many paradigms and ways of thinking about the problem that are very interesting to hear.

DR. VOGEL: I think this area has a little bit of a head start in contrast to a lot of other issues that women are being confronted with in the service. We started some of this work on our own, just out of curiosity, to learn what the gender differences were in terms of physical work capacity. Then the occupational or assignment issue came up and this has driven a fair amount of our work since then.

DR. GABBAY: Are you in a position to comment at all when men, or anyone for that matter, are put into positions for which the requirements exceed their abilities; other than the obvious ones such as physical injuries? I am wondering about the psychological effects of not being able to do your job, no matter how hard you try.

DR. VOGEL: Not particularly. I haven't had any direct involvement or done any research on that. The Army Research Institute for the Behavioral and Social Sciences has done questionnaire work where they have asked both men and women how they feel about their ability to perform the tasks of their occupations. Certainly, a lot of women are being assigned to occupations which clearly they should not be able to perform very well. There must be some mechanism where they are getting by, because they stay in the occupations. Sometimes they get re-assigned, but obviously, certainly during peace time, they can work together; team efforts.

There are a lot of team tasks. We hear through secondhand sources, that a lot of times the women, when they are assigned to demanding tasks, actually don't perform those occupations. They become drivers or end up doing other jobs. I think there is less and less of that as time goes along, but I really don't have a lot of direct information on that.

DR. URSANO: What you are saying is, based on the standards that you are presently developing for the occupations, a large number of women may not be meeting those standards, so there is a discrepancy and it is unclear how it is being handled at the moment.

DR. VOGEL: Major General Ernst, the Deputy Chief of Staff for training at TRADOC and the person who requested this effort, came back from Somalia and a couple of other places, and observed that many times he saw people unable to perform the physical task of their occupation. He now feels that we need a system of matching individuals to job requirements.

DR. FULLERTON: Along with that I was wondering whether you find people (women or anyone, really) who desire and choose to be in a certain occupation, that just is not going to work? In other words, why would someone choose an occupation where they don't have the capacity?

DR. VOGEL: Yes, I think that is happening. I think it may be happening to a lesser degree than it was three or four years ago when a lot of these MOS's were opened up -- mechanics and a lot of non-traditional jobs for women. Women wanted to try them. They felt, "we can do these." There have been physical problems regarding their performance. I used to lecture every year at the Army War College. These were people that just came out of battalion commanders jobs, and they complained a lot, as combat leaders, that they often had women and men who just physically could not perform the jobs.

DR. FULLERTON: I know that when we were in the mortuary, at Dover Air Force Base, after the USS Iowa explosion, there were a handful of women who had volunteered to work in the mortuary. It was interesting. A couple of them were very small in stature. At the very beginning there was an issue that came up of whether they had the upper body strength to be in certain stations like lifting the bodies out of the transfer cases.

DR. URSANO: Which are actually very heavy.

DR. FULLERTON: I got to talking to a couple of them and it was interesting because some of them were saying that it was very important for them to see for themselves as, "this is my challenge to see how I would do in something like this."

DR. VOGEL: There are strong women, there is no question. There is not a lot of overlap in strength between men and women, but there certainly are some women that are strong. The question is, do we allow them the chance to compete or to qualify for those jobs?

DR. URSANO: Can you sketch on your pad the bell shaped curve for men and women for upper body and/or lower body strength? What is the overlap of that?

DR. VOGEL: I can show you a picture better than I can draw. Look at the top. Some of these are so small. I will leave these and pass these around. The other ones are adjusted for body weight and muscle mass. This one on the left-hand side is a machine that measures force that a person can pull up in a squatting position. This is actually a free lift, of lifting weight to a certain height. You can see the actual maximum lifting strength. There is really very little overlap. This is fairly typical of various kinds of strength.

DR. FULLERTON: Do women coming into the military tend to have different physical, height/weight statistics than the general population?

DR. VOGEL: We can only surmise. We really don't have the data. I guess we can compare against some sort of national studies. I can safely say that the level of prior physical activity and physical fitness is a bit better in women entering the service, on average. Typically the woman coming into the Army tends to be a more physically active type of person, on average. People who come in as cadets to West Point are clearly several increments above U.S. norms.

DR. FULLERTON: I wonder if that has to do with coming from a family that focuses on that, or from a military family?

DR. VOGEL: I would think it probably has a pretty strong effect.

DR. URSANO: I am thinking of some of the issues that the Air Force has about a career over time and how requirements can change, such as for pilots; the issues of vision, where vision requirements to begin flying are quite strict. You find, as the pilot ages, he develops alternative ways of decision making, and that it isn't just visual acuity that predicts the best performance. It seems there would be similar issues with weight as well; that as one's job changes you may lift less as you get more senior.

DR. VOGEL: Yes, that is probably the biggest anomaly certainly on the physical side, that Sergeants supposedly shouldn't be lifting as much as the Corporal.

DR. URSANO: You can get someone else to do it for you.

DR. VOGEL: That is right. Actually, this system that we are developing for occupational standards is really aimed at entry level occupations.

DR. STRETCH: Has anyone considered the implications of cross training for different tasks? If you are in a situation where the man who has to lift 75 pounds is out of action and you have to call someone else in to take over?

DR. VOGEL: Yes. In the Marines, everybody, regardless of their occupation, is supposedly an infantryman. Even in the Army, that is why we have basic combat training. Everybody is supposed to be able to defend themselves in wartime, in combat. That I think is a real concern with developing standards for occupations regarding an emergency situation where you have to evacuate another soldier or fill in.

Basically right now, if you have the mental aptitude and the medical profile of an occupation you can take a list and try for any job in the Army, regardless of the physical requirements, other than combat exclusion. I am trying to make some improvement to that situation, to better match people to jobs. This has been going on, of course, in the civilian community for the past 10 or 15 years, particularly in police, in firefighters, and some other occupations. Particularly what we try to look at and trade information on is the emergency workers and health safety workers; fire fighters, police and so on.

DR. URSANO: Are there some areas in which women's physical abilities are, in fact, better? Do you have any occupations, perhaps, where fine motor skills are required?

DR. VOGEL: Certainly in some motor skills women have been demonstrated to have superior abilities; some visual skills.

DR. URSANO: An air traffic controller?

DR. VOGEL: Again, it is not an area that I have a lot of expertise in. But yes, there is, I think a review paper, that maybe all of you are familiar with by David Marlowe that discusses this.

DR. URSANO: We rarely actually see our colleagues' papers. We see everyone else's, but not ours.

DR. VOGEL: I was just re-reading his paper recently. He wrote a book chapter in 1983, The Manning of the Force and Structure of Battle, Part II, Men and Women. He touched on some of the areas where women really are superior at some occupational tasks. This chapter has stood the test of time. There may be others that are more up-to-date. That is just one that I happened to have in my files.

DR. URSANO: I was thinking analogously along the line of how we would apply some of these same principles in the areas of stress and health. The example that comes to mind relates to Ed McCarroll's work -- I don't know if you know COL Ed McCarroll's research.

DR. VOGEL: From years ago.

DR. URSANO: One piece of the work that Ed has worked on and that we have joined with him is looking at responses to the grotesque; especially around the mutilation fear questionnaires. This is one of those things that has some obvious applicability, where responses of the mutilation fear seems to anticipate and predict higher levels of distress on exposure to death and the dead. This is not unexpected, I think, but it is interesting that one could actually measure it. There is a lot yet to look at with that.

For hypotheses sake, and for discussion, let's say in fact, men and women are different on that. Then for occupations such as graves registration, one might, in fact, develop gender-specific training; or you get an extra day of training. It might be that gender is the wrong word. It may happen that the classes are 80% more one way or the other in gender. It would be an extra piece that one gets if you are predicted to need this area of additional training. You don't have the biceps but you do have the triceps so you need to go work out in this particular way. I could imagine that, where you would have an extra exposure class, or an extra lecture. You would have an extra walk through the morgue, whatever it might be, to deal with some of the issues that we might think would decrease or inoculate against mutilation fear for those people who pick up dead bodies. Somebody has to do that. We are still going to have that in absolutely every war. I don't know; what is the ratio of men and women down there, Ed, in graves registration?

COL McCARROLL: It is probably 60/40, 70/30 men to women, something like that.

DR. URSANO: So, that is a fair amount, more than the 10% throughout the service.

COL McCARROLL: I would guess that the average is more than 10%.

DR. VOGEL: You know, in some of our research in part of the women's program, we are looking at physical training regimens that would be specific to women. The feeling is that we can help close the gender gap in physical performance if we try to tailor physical training for women's needs. This may be impractical and maybe it will never be used, but we are trying to better understand the optimum way to improve women's physical performance through training. Integrating that into everyday unit life in the military is going to be tough.

DR. URSANO: The gender differences are really just a paradigm for which we can ask questions we haven't asked before, such as what are the physical requirements for entering a job? Maybe more importantly, are there gender-specific differences in training that are needed to reach a particular level? In other words, if you ask men to lift like this, do you get the same result, or do you need to ask women to lift in some other form in order to get the same end result out of that?

DR. VOGEL: There are biomechanical differences between men and women; centers of gravity, length of limbs, distances between joints. That is some of the work that we currently have underway. Women might use different techniques, not only to do a task but to develop their muscle strength. There is another effort that is going on that I should mention. What used to be the Human Engineering Lab at Aberdeen, and is now called the Human Research and Engineering Directorate of the Army Research Lab, is being tasked to see if we can re-engineer some of the heavier physical tasks in the Army; heavier physical occupations and so on. We can do this to try to get more women to meet the requirements of jobs in the Army. We can do it by selection and matching. We can do it by better physical training. We can also do it by changing some of the jobs and changing some of the tasks.

DR. FULLERTON: I thought of something similar to that. When you were talking about lifting, if you have ever watched movers lift heavy things, there are techniques. There are these small men (obviously they are really strong) but they pick heavy things up just using a strap. There are certain ways of lifting. You would never have the hope of lifting some things no matter how strong you are without technique training, which of goes along with what you are saying about training women.

DR. VOGEL: Something like that is a good approach, particularly in industrial settings where tasks are pretty much standardized. In the Army or in the military you are always concerned about combat and emergency situations where special devices are not available or are not handy. With respect to your point, we have looked at one task of carrying litters. Litter carrying is a very heavy and demanding task, and there are a lot of women medics. I have an occupational therapist who works for me, an ergonomist. She did a study to look at the effect of straps, and the use of harnesses, to help carry litters. It really does help women in their litter carrying performance. So, there is an ergometric fix, so to speak, or an aid, that probably is quite practical. It is hard to get something like that into a system. We are having trouble with the people down at the school in San Antonio to adapt to things like that.

DR. FULLERTON: It is like back packing. There are certain things that, as a woman, you thrust the weight down to carry it on your hips rather than up here, and very little things can make a huge difference.

DR. VOGEL: Should we have a different type of load carriage equipment for women versus men? I don't know.

DR. FULLERTON: Or adjust it differently?

DR. VOGEL: There are a couple of load carriage studies going on as a result of this women's study, women's program, to look at that. People often focus on the absolute differences in strength between men and women and forget some of the mechanical, biomechanical, and anthropometric differences that really are significant. To the military, this is a question of whether they can customize tasks and equipment to gender differences. They have not delved into this to any extent. I think this whole women's program will give that a big boost, a big push.

DR. URSANO: What are the effects over time of age on strength in women and in men. I presume it is a decay curve?

DR. VOGEL: It is a decay curve. I do not believe that we have much aging data on women in terms of physical performance or physical capacity. That is an area that we are probably very deficient in. It is almost non-existent. Even in the civilian community. With men the effect of aging on physical capacity has been studied; but only in men. I am trying to recall whether there is really much about that in women.

Getting back to body composition, our first challenge was trying to get enough women to study. In regard to aging or the age effect, if you get into the upper age levels in the military there are just no women available, or so few that it is a difficult topic to study.

DR. FULLERTON: It is interesting. There might be some data regarding junior high; President Kennedy's physical fitness tasks for junior high. There are records of that.

DR. VOGEL: It is over a fairly narrow age range. I mean, just the school. We are focusing on 30 and 40-year-olds, and that data is hard to come by. There may be bits and pieces around; certainly changes in adolescence or pre-adolescence, that data is available.

DR. FULLERTON: Yes, It is interesting, I keep thinking about something that I saw on TV and then read something about, these wilderness camps for adolescents, and this big push on the physical, the get-out-in-the-woods-and-survive, and the deaths that have occurred in them. Some of this is really interesting and I think it would be applicable. There is a very big issue about, how we train the trainers to understand the physical needs for these places. These are kids that have had problems, but this is very physical.

DR. URSANO: You remind me of the example we had recently, the training deaths in the Rangers. What about other careers, where we have had training deaths or major training accidents, other than flying?

DR. VOGEL: Of course women are not in Rangers or in Special Forces.

DR. URSANO: Perhaps some of the engineering fields or working with major machinery or something?

DR. VOGEL: That might be close. Basically, you don't find women in the infantry or artillery or armor, and in combat engineers it is somewhat limited. There are a lot of women in signal and medical but you don't usually find there that the training is such a high physical risk as you find in some of the combat arms.

DR. URSANO: What about the effects of pregnancy or of birth control pills? I am not sure there is any other common medication that a large number of women would be expected to be on, in terms of physical strength, during pregnancy. At the later end of pregnancy there are major effects. What about the early stages where you might not yet have determined that you are pregnant, the first six weeks, the first eight weeks?

DR. VOGEL: Actually, this is one area that we are also investigating as part of the women's defense program. We are focusing there on post-partum fitness, or return to standards, where we are trying to go back and look at their physical fitness data prior to pregnancy.

Regarding changes in fitness or performance during the very early stages of pregnancy, I don't know if there is any information that has been captured on that systematically. That is an area of fairly intense interest. Of course, women are exempt from fitness tests during pregnancy and for a period after delivery. We are very much interested in how soon fitness and body fat standards should be imposed after delivery.

DR. URSANO: Do we have any ballpark figures on the post-partum issue? I am reminded that Dave gave congressional testimony on how soon women should be deployed during Desert Storm. The issue is that nobody knows any numbers so we fall into one of those psychological issues. It would be interesting if there were some physical data that would get us out of this endless debate.

DR. KNUDSON: Isn't there some data coming out now that breast feeding is really important for a woman to be able to get her immune system back on track? I thought I read something recently that they are finding out it is not just good for the baby, but good for the woman herself. I forget how many months; they said you need so many months, otherwise your immune system doesn't recover.

DR. TILLMAN: Then you have to consider how many women who are breast feeding and you don't have that many that are really doing it. It is larger than it was, say, 10 years ago, but it is still not a great deal of women.

DR. URSANO: It would be interesting to know how soon afterwards they returned to their old capacity.

DR. TILLMAN: Those are the real issues because that is the battle that you fight all the time. You sit there and you rationalize and say, "okay, here is a woman who was doing physical activity up to a certain point." Some women who are really motivated will continue to do so. There are women who have continued to swim during their pregnancy and maintained their condition. A lot of them will then cease from doing anything. They have gone from seven to eight months (once they find out they are pregnant) of doing almost nothing, and then say, in six weeks you are ready to go back to regular activities and duties. They have not necessarily lost all the weight they have gained during that period of time. Then they say, "when do they go back into the weight control programs?" and those kinds of things. That kind of data would be useful.

DR. VOGEL: We just started a study focusing on some of those studies, actually out of Madigan in Seattle and Tacoma. We are going to follow a fairly sizeable cohort of both service members and non-service women, looking at what conditions of fitness training were employed prior to pregnancy and their return to performance levels after delivery.

DR. URSANO: That will be a piece of information for exactly this issue. As far as I know, the Army and the Navy and the Air Force have not changed their rules, and they were all different, as I recall.

DR. VOGEL: They are different and they have been arguing about them, about how soon should they return to standards. Nobody really has good information on which to base a decision.

DR. URSANO: My bet is that it is going to be longer than people might think, at least for the average person.

DR. VOGEL: I think that is our inkling, too.

DR. URSANO: Again, thinking of paradigms and how this applies in the area of stress, what we are really talking about is developmental events. I mean, as we talk about aging, there is both aging in terms of the getting-older process, but there are also events that occur during life. Pregnancy is one of those. I am reminded of the example in men that we see in flyers frequently. Dave Jones, who is the editor of Aviation and Space and Environmental Medicine, used to say that somewhere around age 28, fighter pilots frequently get married. They have children shortly after that. You then see a substantial shift in their interest in their job activity then. It really does take a little bit of dare-devilness to be a fighter pilot; some of that changed. For some of them it changed sufficiently for them to want to change occupations.

DR. STRETCH: Do you have any information on the role of nutrition in terms of how men and women respond to training?. Are there any things that you would be doing differently to gear training toward improving?

DR. VOGEL: Yes, there is certainly some information about gender differences in nutritional habits and how they respond to education. Certainly you see more abnormalities, or I should say eating disorders, in women. I think we have some data on that. Again, a lot of the research up until very recently has been focused on men, and has not used women populations. Really, I guess I can't give you an answer. I think so far most of the data has been acquired in terms of eating disorder prevalence and nutritional habits, but how that really affects performance, I am not sure. I really can't say at this point.

DR. FULLERTON: When I saw how many calories were in those MRE's (Meals Ready to Eat) I didn't eat anything. I was afraid to have one bite of it because it was 300 calories in one little bite. It ends up being 1,500 or 2,000.

DR. VOGEL: Certainly one of the stresses of military life, I think, for women, is military feeding. One of the worst situations we can look at is at West Point among the cadets. It seems that (I don't recall the numbers exactly) a very high percentage of female cadets really fight weight and the weight/body fat standards. They become very physically active and appetites go up and the food is put in front of them, and they really find it quite difficult not to eat it.

The same thing, to a lesser extent, is true in basic training. The average woman in basic training gains just a little bit of weight. Some of that gain is in muscle mass, but they lose very little body fat during basic training, where men on average will lose a fair amount. Actually, we made a change a couple of years ago where men are allowed to come in quite a few percentage points of body fat over what the retention standard is. In other words, the accession standard is somewhat more liberal than the retention standard because men have demonstrated that they can lose that extra body fat during basic and AIT; by the time they get in a unit. Women have shown that they don't lose that body fat. So, there are some feeding and dietary problems that face women that make it harder for them to meet the standards.

DR. FULLERTON: In eating disorders sometimes (I don't know if this is true with males) it becomes the reverse with exercise. In fighting off this whole thing about eating, they are more physically active. There are some studies that have to do with the less you eat, the less you are actually prone to eat, I forget exactly what this was, but it had to do with eating disorders, and if you start off eating something that you consider bad, you are more prone to do that for the rest of the day; and sort of a similar reverse type thing for exercise.

DR. URSANO: Are there references that you think would be helpful to us, perhaps that have examples or paradigms or reviews of these kinds of issues?

DR. VOGEL: Yes. I have a few things with me. We put together a couple of years ago an annotated bibliography of research at our institute, where a vast majority of this has taken place. You can also look at this. If you have reports or reviews that you would like out of this, let me know. I will send you some things that are a lot of more specific and I will put together a package of reports that you might find useful or would be interested in.

DR. FULLERTON: Do you know of any studies where people have looked at women in MOPP gear (Mission Oriented Protective Posture), in MOPP training? I know there were some about eight, nine years ago.

DR. VOGEL: Yes, and there have been a few that have gone on in the last two or three years at our institute. One of the major and controversial findings is that women do relatively poorer in MOPP than men in performing even cognitive tasks. Some of this work needs to be repeated because we can't always explain it in a thermal regulation, temperature regulation sense. It is not research that I have been involved with, but if you are interested, I will try to pull that together, too.

DR. FULLERTON: I would be interested.

DR. URSANO: I think it would be well worth reading. Any other thoughts or questions that people want to ask?

I want to thank you, Jim, for joining us and chatting with us. It was enlightening. It follows a paradigm that we had when we looked at chemical and biological warfare. We ended up looking at things that initially seemed quite distant to that, such as how do people perform in the Antarctic. In fact, it is very informative in terms of where people are thinking through problems that are somewhat similar, but using very different frames of reference. Clearly this area has grappled with these issues about how to think through gender differences and their effects on performance in the military community in a much more sophisticated way than most other areas of medicine have; there is no questions about it.

DR. VOGEL: I will certainly send you a package of written material and reports and I will be glad to try to answer or provide information on any specifics that come up in the future. Thank you.

Developmental Approaches to Families in Stress

Peter Steinglass, M.D.

We are pleased to have Peter Steinglass, M.D. as our speaker. Dr. Steinglass is Director of the Nathan Ackerman Institute in New York City. He has done extensive research on community, family and individual responses to disasters. He has also done extensive empirical research on families and their functions. Prior to going to New York, he was a Professor at George Washington University. Today he will talk to us on: "Developmental Approaches to Families in Stress.".

DR. STEINGLASS: One perspective shows there are four different stages in the family life cycle: childhood, beginning marriage, early years and ending years. There is the splitter. As you can see, things are getting fine-tuned in terms of these different things. You have stage four, school-aged family with A, infants, B, preschoolers, et cetera. It gets very detailed.

As we moved into the seventies and eighties and people started looking at these models, the problem that became immediately apparent, which I pointed out in the first overhead, is that it looked as if there are only three families left in the U.S. that were going through this life cycle the way they were supposed to. People were just all over the map.

This was actually when I was down at GW (George Washington University). We tried to approach this. We thought we might be able to go at it from a somewhat different angle, in which we would try to look at the family as a system and ask questions about the ways in which systems developed over time. We introduced a construct that we call systemic maturation; a jargon term. The importance in the use of the term was in thinking about family as an organism or as an entity in its own right that has its own maturational characteristics. These characteristics which are systemic characteristics will occur independently of the cast of characters within the family. So for example, if an eighteen year old and a twenty year old get married and start a family, that family will be facing the same kinds of developmental tasks or challenges as a couple in their sixties that are getting married; maybe he's getting married for the second time, she for the third time and they have children from all of the different marriages. That second type of marriage, from a maturational and developmental point of view, is at the same stage, or facing the same kinds of tasks or challenges. We found this very useful clinically because it turned out to make much more sense in terms of interpreting issues or the sources of stress that these different families were experiencing, looked at from a developmental point of view.

In the model that we developed, we wound up dividing the family life cycle into three different phases; we called these the early phase, the middle phase and the late phase. We tried to identify a series of tasks, a relatively small number of tasks, almost for illustrative purposes, that we might say would vary across this life cycle in terms of their importance and intensity to help us then to understand why different families seemed either be laid low by a particular event while another family handled it easily. We also hoped to show why different families at different points along the way seem to be getting into problem areas that were roughly comparable to one another, even though the ages of the people in the family might be really quite different.

In looking at these particular tasks, what we concentrated on were three different types of tasks. It is an emphasis on boundary definition, what we call thematic specialization and clarification of shared beliefs. Here's where these ideas came from. We have been spending a lot of time researching and trying to both describe and develop research methodology for examining what we call the regulatory behaviors within families. What all clinicians note about families is that families seem to be able to affect some kind of stability of their internal environment in the face of all kinds of external and sometimes internal pressures. So there must be mechanisms or behaviors within families that serve to provide that kind of regularity, patterning, and stability to the internal environment within the family.

We were particularly impressed by three different types of behaviors; daily routines, family rituals and short-term problem-solving strategies or styles that families used. Then we could develop methods for studying each of these observable behaviors. These behaviors in turn seemed to be driven by, or seemed to be organized by, two different constructs. These were hypothetical constructs that we felt also were characteristic of families. One we called family identity and the second we called family temperament. We had a model then in which we had a concept of family regulation that included a number of underlying variables that we called regulatory constructs. There were two of these: family identity and family temperament. These, in turn, were either reflected in or seemed to organize and shape at least three different aspects of family life that were measurable and that was the big advantage to it. You could then design a methodology that could quantify family behavior in these different areas and begin to describe differences in families in these different areas.

The best way of thinking about the family identity and family temperament constructs is to think of them as the family-level equivalent of individual personality variables in the same way that you would think about individual temperament and individual identity. What we're saying is that the family as a group has these kinds of characteristics. That's the main difference in the way of thinking about this model. It's taking this kind of leap in which we're saying that there are these systemic properties to families that are the product of the shared connections and blends of the different members of the family. These characteristics have at least these two different components; an identity component that perhaps could be defined as emanating from the shared cognitive properties of a family and a temperamental quality that comes from the shared biological givens within the family.

We now start talking from the temperament point of view. We describe hot families and cool families; uptight families and laid-back families. There are high mobility families and low mobility families; families that have high tolerance for uncertainty and families that are thrown for a loop with any change in the external environment; families that demand a great deal of patterning in their environment, families that seem not to require any patterning to the physical environment in which they live; families that have very different rhythmicities to them in terms of the ways in which the members of the family either act in a highly coordinated fashion or seem to be spinning off as individuals in a lot of different directions.

All of these terms that we can then use and apply to families are different ways of talking about family temperament. In like fashion we can also talk about families that have shared world views; a little bit like the locus of control concept in which one could then say that families as well as individuals either are tipping toward the internal or external locus of control variable or end of that particular dimension. Also, families as groups develop shared values, shared goals, and shared senses of themselves. Those things in total make up what we would call the family's identity, the family's sense of itself.

What we were saying when we moved to the developmental end of things is that these different regulatory properties in families would be more or less important at different stages along the way. In the early phases of development, the family would be primarily focused on activities that helped to define its uniqueness in the universe. A lot of the activities that families typically would get involved in in the early phase I will describe in a moment and you will recognize them all from your own family. One of the ways of thinking of those things is that these are attempts on the part of the new family to develop clear boundaries around itself, such that it could say you as an individual are part of this family, you are not. There are rules for entering this family. You have to abide by these rules. This family is now defined as a unique entity in space.

This is a new family that is made up of individuals coming from other families. There will always be a lot of action and noise between these two different systems. As I'm talking, I'm hoping that what you're thinking about are the clashes between the needs and identities of different systems in your universe. Thus, the military system versus the family system will have some values that are in synch, but a lot of values that aren't. How do these differences get adjudicated? To what extent is there room for that kind of process to unfold in times of stress? Hopefully we can move in that direction in the discussion.

DR. URSANO: I was also thinking, just as you were outlining the different descriptors of families, that one of our areas of concern is the abusive family including issues of spouse abuse and violence in families. Another is the issue of families that may more easily or difficulty deal with relocation and separation. This is really an ongoing issue. There is also the single parent family, most of which in the military are primarily women. Each of those are particular types of families that must have specific vulnerabilities as well as assets.

DR. STEINGLASS: I'm also asking you to add this additional dimension which is that within each of these, one can also think in terms of these different life phases and what the needs of the family would then be at a particular phase.

DR. FULLERTON: How does it fit if you're just living with a significant other?

DR. GABBAY: I guess this is kind of a moot question but to what extent is it possible to predict the regulatory behaviors of a family as a system if you know the temperament trait or personality trait of the members? How far along are you in that?

DR. STEINGLASS: I don't know. I've always wanted to move that ahead by doing that kind of issue. We came upon this whole notion through a study that was utilizing observations and trained observers to go into people's homes on nine separate occasions over a six month time period. The observers spent four hours at a clip each time with the family doing a lot of measures of family use of time and space. We were measuring movement around the house, interaction rates; very little about verbal content, some very rough coding in terms of verbal content, but mainly data that we thought of as the basic building blocks of behavior in relation to use of time and space. Then we used those building blocks to construct a series of indices that we thought might be reflective of this notion of temperament.

We had a number of measures called activity rates in the family asking how much of this is occurring. Then we had other things that looked at patterns or rhythmicity across time. What was very clear from that study was that the characteristics of the family were remarkably stable at the time. If you went in on nine separate occasions and you looked at that particular family, by the second or third session you could predict with remarkable accuracy what that evening was going to be like if you came in a third, fourth or fifth time. If you then came back two years later, which we did, and repeated those home observations and compared them to what had happened two years before, again there was remarkable consistency. That feels a lot like the temperament research, looked at from a longitudinal perspective, because there really had been a lot of studies that looked at temperamental variables across twenty years or twenty-five years. There isn't any one-to-one correlation, but there's really a quite remarkable constancy around some variables over that period of time.

That's not the question you're asking, however, and that's the one that fascinates me. Is this simply some additive variable of all this stuff put together? Is there something about the way this fits together that creates an atmosphere, a mood, in our terminology the temperament, that could not simply be predicted from each of the individuals within the family?

DR. GABBAY: It sounds like you have a highly developed methodology for assessing the family regulatory behavior. Of course, we know there are a lot of ways of assessing temperament and personality.

DR. STEINGLASS: It was challenging. The home observations were very expensive to do. As a research study, it costs a lot. To do it simply around the issue of temperament gets you nowhere.

DR. FULLERTON: It sounds like you're talking about the family's traits also. It's interesting because what you pick to observe, in a way, is the back and forth between what you chose to observe and how constant it was. If you were going to observe an individual, depending on what you picked, it would be more or less constant over time. But that's exactly what I would call traits.

DR. STEINGLASS: It is a trait variable, I think. Just to make sure that you understand what we're saying, there is also a degree of variability in some of these behaviors and it's the amount of variability that becomes the constant in effect. Some families operate within a very narrow range of behaviors. Others will show a much broader spectrum of behaviors. You won't have a family that's narrow on day one and broad on day three. The narrows are always narrow, the broads are always broads. The broads will show that variability within that four hour time.

DR. FULLERTON: There might be variability in one realm and then it might be very constricted in another.

DR. STEINGLASS: With the ones that we were measuring, they either were variable or they weren't. It may have been just a product of what we were looking at.

DR. FULLERTON: Like expression of anger or something?

DR. STEINGLASS: Well interestingly, we had two different dimensions that came out of a factor analysis. One was structural variability. Those were things like how often you move from one room to another? We had another that we called content variability that came out of the analysis of the little speech content coding that we were doing. It was a very rough way of dividing the content of speech into things like information exchange versus problem solving; that kind of thing at a very rough level. Even at that relatively low degree of specificity, we were able to come up with a variable that we called content variability, looking at the variability both within sessions and across sessions. That variability also ran with the structural variability. At least in this particular study, it wasn't the case that there were some people that were physically very variable, but talked the same line.

DR. FULLERTON: Did the observers sit in different areas or move around?

DR. STEINGLASS: They moved around. They were assigned to one or the other spouse in the family and they followed that spouse around. My family actually was the first family that we observed. That's a standard rule that I've used for almost every new methodology. I will try it out on my own family first and see how it feels. I try to be a subject basically of the methodology and get some sense of what it's like to be on the other side. That's been very valuable. We were very concerned about the intrusiveness and how much it was going to distort behavior, those kinds of things. At the time I did this work my children were pretty young. I think my daughter was around five or six, something like that, and my son was around nine or ten. They were curious and behaving differently in the first observation session, very little by the second. By the third or fourth, they were treating the observers like they were work people who had come into the house. It just didn't seem to matter very much. I remember in the fourth session or the fifth session, I stretched out on the couch with my wife and we were watching TV and I realized suddenly that I had completely forgotten that these observers were there. I was talking about something fairly intimate about work. It was troubling. But it was a good index to me of how much you really do forget.

The example I wanted to give you about this boundary definition is the routine thing that comes up all the time in the fights that go on. Let's just talk about marriages for now, but it doesn't matter whether people are married. Anybody who is living in a committed and intimate relationship in a household comes from other families so they are the products of other families. There will be a series of struggles, fights, whatever you want to call them, around important holidays that have been family type holidays. The fight will always be which family of origin are you going to be spending your holiday with. In early marriages, there will always be a fight about Thanksgiving if the two families of origin live in the same city.

In my first year of marriage, it was a little bit different issue. We were living in Cambridge in Boston in the first summer we were married. My in-laws lived in New York City. My father-in-law's mother was living in Albany. I don't know if you have the geography here, but here's New York City, here's Albany, here's Boston. We come home one afternoon and there are my in-laws parked on our front door step. What's the story? Well, the story is they were visiting his mother, so since it was on the way home, they decided they would drop in and see us; on the way home from Albany to Boston to New York. This was three weeks into our marriage. I didn't understand any of this at the time, so I just blew up. The issue clearly was this jockeying between these two different systems around the loyalty of my wife. Is she now primarily a member of the family-of-origin or is this now a new family that has its own rights, that must be respected by calling first, et cetera, et cetera? It would never occur to them, nor would it occur to my wife to call them to find out if it's okay for her to come and visit, still from her point of view, her house, her family, et cetera, because, in fact, she is still a member of that family. However, this other marriage is brand new and there is this jockeying then that goes on with a lot of noise, a lot of fights, a lot of conflict that from a developmental point of view becomes healthy. You look at that and say, "Just what ought they to be doing?" You should see that kind of jockeying going on.

If these are two people in their sixties, that same fight will happen only this time it's "which set of kids are we going to be spending Thanksgiving with?" The generational issue is different, but the developmental issue is exactly the same. It's tremendously helpful, I've said this now twelve times, but it's tremendously helpful from a clinical point of view to be able to think in these developmental terms. It helps to normalize that situation for people who are in the middle of this and then helps you also to begin to identify in a more reasonable way the outliers. It's where it's really off the charts and is something that you ought to be concerned about.

The last point I want to make is suppose you have some external stressor event that separates the family, causes a need for one member of the family to be pulled out of this family unit. The experience of a family will be dramatically different if a family is in this early phase than if they're in the middle phase; dramatically different. I don't know whether you've all seen "Apollo 13" yet, it's a terrific movie, there are some wonderful family scenes in the movie. This is a family that is very much in the middle phase, as you will hear in a moment. Everybody within the family is buying into the identity of this family around this particular event, so this mission is in that particular family level. In the early phase, they don't know yet what their main themes are going to be or what their identity is. They're still working on that, so if you pull somebody out of that family it's going to create much more noise, much difficulty for that family.

PARTICIPANT: With half of marriages ending in divorce and therefore a majority of the people getting remarried, how different are these phases with the people that get remarried? Are they faster, quicker, or are they actually more difficult because there are more confounders involved?

DR. STEINGLASS: Actually they are often more difficult because the issues are the same, but they are going on at multiple levels. Instead of having just two families that you've come from that you have to deal with, you now have at least four and maybe more. The degree of complexity of the issues gets amplified. The difficulty in being able to see the central theme also gets much tougher. Often from a clinical point of view, what we help to do is we help the families to pull out what the main themes are at this particular point to get them back on track.

DR. URSANO: Does temperament and identity travel across divorces?

DR. STEINGLASS: Great question. You go into people's homes and you're there for a half an hour. We all know this, and children know it even more than we do. They will go to the homes of six different friends and they will know that each home is dramatically different, its flavor and its quality. You live in a neighborhood and there is one family that everybody knows when visiting, you always call first and you respect their boundaries. Those are boundary phenomena. In systems terms we talk about boundary permeability. The difference is in the degree of permeability around this particular family and these are characteristics of family. Do those move on to the next family, do you take that with you? I don't know. I've been in just one marriage, so I don't have any personal experiences to fall back on in terms of thinking about myself and my own experience.

Now, the middle phase. The key thing in middle phase is that families begin to concentrate their attention, activities and interests on a limited number of themes. They begin to establish priorities. Another term I would use is that they begin to identify some areas that become organizing principles for behavior. Another way of talking about it is that families begin to specialize in certain areas. We use this term thematic specialization to characterize that particular phase. What's important here for me from a clinical point of view is that the kinds of things that can take on these organizing capacities for families include not only the obvious things like children and work, but can also include medical or psychiatric illnesses. A lot of research work that I did in the alcoholism area used this construct and talked about the notion of alcohol as an organizing principle for life in some families. At that point, the family is now organized around alcohol. We use this term alcoholic family, meaning the whole family is dancing to the tune of alcoholism issues. Even though everybody might not be drinking at alcoholic levels this is still the center. If you say to them, "Tell me what's important for me to know about you as a family," one of the things that they will say is we've been laid low by alcoholism for a long time. One interviewed family said, "we're a family that always walks on egg shells." We asked "why?" and they responded, "we never know when he's going to start drinking again." There's a way of describing an entire family, routines, and feelings. Both behavioral and affective components of the family are tied to that particular issue.

Trauma can also have this characteristic. Often in these situations, or even in times of acute stress, one of the parameters that is important to track is the extent to which the impact of the trauma is limited at the level of the individual; to what extent does it pervade and invade the entire family system? The family then becomes the trauma victim.

DR. FULLERTON: What's the mechanism within the family that makes it protective?

DR. STEINGLASS: That makes one family able to protect themselves from this? Actually, that's one of the most important questions. That's a question about prevention. How is it that in some families they are able to limit the impact of a particular event and in other families it just seems to invade every corner and aspect of family life? We have some ideas about it in terms of alcoholism. We've actually done some studies in terms of alcoholism. If you're interested in that, I can tell you a little about that because it might apply as well.

Here we are in the middle phase, and there are lots of questions then around this notion of thematic specialization. The interest in boundary definition dies down. It dies down because the family is now established and recognized by the external world as an entity in its own right. The fights stop. People start acting more on a practical level than they do on an emotional level around some of the issues that were red hot in the early days.

The next point to emphasize is that it is not the case that every single family goes from an early phase to a middle phase. In other words, there are some families that never get out of early phase. They will be married ten years or twenty years, the family will exist for that period of time and they are still somehow caught in these early phase issues. They never develop a sense of commitment, theme, or a clear cut identity. Things remain very emotional within that family. Those are the kinds of families that we as clinicians experience as directionless. They don't seem to know who they are. These are often families that don't seem to be able to take charge of their treatment experiences. They will go to four different therapists or four different kinds of programs. Whatever program they're in, they follow the advice of that program. Sometimes the programs love them. They seem like they're high compliance families and they love them. They leave the program and nothing sticks, because they haven't incorporated any of this. It's really not a part of their internal sense of themselves.

One of the things that we've actually used clinically to get at this issue of themes is a little exercise called the bumper sticker exercise. It goes like this. We ask the family to discuss together a motto or a bumper sticker they would like to put on their car. That bumper sticker will announce to the world what's really critical about this family, sort of like a banner or something, a code of honor. Then there's this idea of the family developing, through a discussion, this shared bumper sticker. Some families can't do it. There really is no sense of the family as a group. If they're three people, they will have three different bumper stickers. In other families, there is this united sense that emerges. It's really often very striking how creative families can be.

Now the last phase, this late phase, is a little harder to grab hold of because I'm not sure we're all that clear on what's going on with that phase. Here's the way we thought about it. We got very interested in the issue of transmission across generations, in large part because we were thinking about this when we were working on alcoholism issues: cross -generation transmission of alcoholism and the extent to which family variables play a role is a very important topic to engage.

What we felt we saw in a group of families moved into what we thought of as the late phase. There was a process of consolidation, clarification and a transmission of values from one generation to the next. We called that clarification or shared beliefs. Now it's at that phase in development when the family starts saying things like, "this is the way we do things in our family." They will say in particular to people who are coming into the family to hook up with some member of the family. They are looked on as a person who will then take a member of the family off to spinoff a new family unit. This is an attempt to pass these values, to communicate or transmit the family identity from one generation to the next. In order to do that as a preliminary to that, you have to, in your own head, clarify what these things are. These things tended to be below the surface, outside of conscious awareness, and a phase of life in which things seem to be sort of humming along. There's a lot of regularity to it, then it shifts gradually into a phase in which there's much more interest in what these underlying values might be. Statements are being made on the part of family about these important values and the need to continue them into the next generation. The physical metaphor that I had in my head to think about is what happens in cell mitosis. I kept on thinking about this, back from Biology 101; images of chromatin gradually developing greater clarity and then breaking up into chromosomes that had previously just been entangled in the nucleus now become clarified as a preliminary to cell division. Some process like that seems to be occurring in families in which there really is this clarification of values.

These things overlap. The late phase in one family probably corresponds with the early phase in the next generation and there's an overlap. That's the basic model about families and family development. As I said, it turned out to be a very useful way of framing and normalizing certain issues that would be going on within families that might otherwise be thought of as something of great concern. It also helped us to begin to think about not only families from a developmental point of view, but also to think about external events from a developmental point of view as well. That's the last point I wanted to make.

We were doing this work in the area of chronic medical illness or chronic psychiatric illness. The next step then was to begin to think about the illness, itself, as having developmental characteristics or an illness also having a developmental timeline. One illness might be episodic, another illness might be gradually deteriorating. One illness might be very predictable, another illness might be unpredictable. But the illness itself has developmental characteristics to it.

Then the final step is to say, "well, how do these developmental characteristics fit together?" From a visual point of view, what you would imagine is that you have at least three different timelines. We have a set of timelines related to individual development. We also have timelines related to family development, and we have a timeline related to the event of interest.

Our question then is to what extent are these timelines in some kind of coherent relationship one to another? To what extent are these timelines out of synch? In those instances in which they are out of synch, what happens? To what extent is the family or an individual able to assert their developmental needs and their developmental timeline and begin to organize their approach to this event? Within the framework of their developmental needs, to what extent is their development thrown off course as a result of the intrusion or the emergence of this particular event? In those instances in which it's thrown off course, we introduce the term developmental distortion. We talk about the notion of a traumatic event having the potential capacity for distorting or throwing the family and its particular development off-track.

What we've been doing with the model most recently is using it to design a series of multiple family discussion groups and we've been applying the model to a number of different conditions. We have one group that we've been running with a group of adolescent cancer patients and their families, another with a geriatric diabetic population. We're currently developing one for AIDS, but it would seem to me that it also would be a potentially very valuable intervention to use in the PTSD areas. In that particular group, what we basically do is we set it up as a psycho-educational group and we try to translate this model for the family in a series of exercises and discussions internal to the group that allow them to grab hold of constructs like family identity and to apply it to their own issues. So where do you want to go with this, if anywhere? Or should we switch the topic entirely?

DR. URSANO: Any thoughts about the PTSD issue or our family systems? They will include the dually employed, both on active duty, in which one or both become deployed and potentially traumatized. Is there anything we know about what happens if the woman suffers the trauma versus the man in terms of the family?

DR. STEINGLASS: I don't know.

DR. URSANO: In particular, young families. The eighteen to twenty-five year old group is also of particular interest.

DR. STEINGLASS: We did one study in the alcoholism area where we attempted to look at the gender of the alcoholic in the family. We were particularly interested in how that would influence behavior at home. We were confident that we would see huge gender differences in terms of home behavior. There were none. It was a very small sample. I wouldn't want to stand on it in terms of making a big deal about it. In that particular sample of thirty families, it was an example at least of the ability of the family to compensate internally for the malfunctioning of one member of the family. That compensation process seemed independent of the gender of the person. That was one study.

On the other hand, in the disaster study, there were fairly substantial gender differences in the experience of the events, or the impact of the event on individuals as filtered through the community. It did seem to vary based on gender. So it's hard to know. I think what we can say at this point is that there are dramatic differences in the way men and women by and large experience marriages and the kinds of things that they're looking for in marriages in order to feel satisfied with that particular experience. It certainly seems to be the case that divorce has a very different impact on members as women. Men are laid low to a much greater extent than women are by divorce. I think in the area that you're talking about, which is so much more specific in what happens before the event in terms of the way in which a person's identity gets wrapped up in the job, that it would be hard to just extrapolate from civilian populations.

DR. URSANO: What about the reunion/separation issues and family type temperament or identity?

DR. STEINGLASS: Well, you mean around gender?

DR. URSANO: Eventually gender, but in general perhaps the question addresses people coming home from DESERT STORM. One of the issues is how quickly a family allows someone to return. Families structure themselves when people are away to accommodate and cope and some easily respond to reunion and others do not. It becomes an additional stressor for the people coming back.

DR. STEINGLASS: I think that these multiple family groups would be terrific for that kind of thing. Basically, what you would get out of that sort of experience is to help the families normalize their unique reactions to what's going on. They would be able to have an opportunity to identify what they share and therefore what is attributable to the event, itself, and how they vary based on the type of family that they want to be. In both those instances we start off from the assumption that this is a product of the family's personality and not a product of the pathology.

We actually used the metaphor of cancer. We used that whole experience as one of the metaphors that's before the family. We talk about the cancer experience as being the equivalent of hostage-taking. We have some wonderful clips, in fact I have a video machine here that I did for another presentation that actually has a clip of this family talking about this. In this particular group, we started off with a metaphor that the cancer was a little bit like a journey in a foreign land. We were into that kind of notion. The family has been traveling around. They've had to place themselves in the hands of this guide who was a stranger before they met him or her. There is a strange language and odd sights and so forth and so on, and now it's time to return home. This is a group for families who are at the phase where acute treatment has ended and the child is declared disease-free. Many of these families get stuck at that point. They have a lot of trouble with letting go and returning to a "non-illness" or a normal environment. The groups were designed for that kind of population.

We make our pitch that they have been on a journey and now it's time to come home. Then we open it up for discussion. This father starts talking and he says, "That's not what it's like at all." He said, "This was like being taken hostage. It's the worst experience I've ever had in my life. I feel I've been terrorized by this." He used all this vivid imagery. PTSD is everywhere now right? There's a whole line of research in adaptation to cancer that also uses the PTSD analogy. This man was loaded with this kind of imagery. Now they say, "We're fine. We've been rescued, everything is fine, but I can't just relax and say it's fine. I still can't get these images out of my head." He talks in exactly this particular fashion.

Another family then says, "Our experience wasn't the same as yours in terms of that particular imagery. We also went through a period of time in which we had to place ourselves in the hands of the physicians and basically go along with the protocols and watch our child be tortured by these various procedures." Out of those kinds of discussions these different families will then begin to struggle with what the common ground is. For each of the families, to what extent were there a series of disruptions that were created by the need on the part of the family to organize their lives based on chemotherapy protocols? In other words, they lost control of that element of their lives. To what extent was it the case across all the families that they had to make some decision about identifying an adult who would basically cover this child during that period of time and to cover the relationship with the hospital? In some families that would be the same person over the entire three to six months of the treatment protocol. In another family, that might be a role that would be switched around.

DR. SLUSARCICK: You're talking about the family spokesperson?

DR. STEINGLASS: No, the person who would go to the hospital with the child and stay there at the hospital for an extended period of time. There are tremendous demands placed on families around these particular procedures and protocols and very little attentiveness can be paid to that. This is a study we're doing at Sloan Kettering Cancer Center. These are all bench researchers doing high tech things. The focus on the trauma to the family as a whole is not addressed. It is the idea that the families should just feel great that they rescued this child and the family should be eternally grateful and so forth and so on. If the family is feeling out of sorts or angry or uncared for, the interaction between the hospital and the family leaves the family feeling that there's something wrong with them for having these kinds of feelings. Then they get into these groups and all the families are having these feelings. That was a tremendously normalizing kind of experience.

DR. FULLERTON: That sounds a little bit like the reunion issue. It's supposed to be great and the person has been dreaming about this since they walked out the front door. It gets to expectations and anticipation a little bit.

DR. STEINGLASS: Also within the group what would emerge is that there are ten different ways to handle the reentry issue and here's a whole menu. From our point of view, when we design these programs, we get called in as experts and we're supposed to come up with a set of rules for these families. This is what they're supposed to do. We're supposed to hold people for X amount of time. We're supposed to keep the press away for a certain amount of time. These various rules that we come up with, those are rules that work for 51%, maybe a little bit more, of the families. Then there are all these other families where they even need some variant of it or something completely different. It's hard for us in our position as "expert" to be able to deliver a message to people who are supposed to be making decisions about the program designs and say to them, "listen, what we would like you to do is design so that there are ten different tracks." They can't handle that. If, instead, you're in a position in which you say that a central part of this process is to bring families together, then you have some control over the design of what they need. Our role is to facilitate that particular process. That takes a lot of the pressure off us and in the end probably works much better for families.

That's what all these psycho-ed groups have discovered basically; the inherent power in the family unit to figure these things out, insofar as they are allowed to express their feelings and their feelings are endorsed as legitimate things that people experience in the middle of these things. We don't do all these things for them, but rather we are in charge of setting up the parties so they can talk to each other.

DR. FULLERTON: Sort of like, is it safe to go back in the water? Or if you have a broken bone -- what is that called, a callous or something? Is it stronger when it heals or is it always going to be a weak link? The sharks are all gone, is it safe to go back in the water?

DR. STEINGLASS: Anyway, we could, without any trouble, design a six to eight session group around that issue. I guarantee you it would be great and families would benefit tremendously from it. It does require that the people who are running it be allowed to relax and solve their own problems.

DR. URSANO: What about the spouse abuse issue?

DR. STEINGLASS: We've done that with spouse abuse too, believe it or not. The current sort of politically correct notion in the marital violence and spouse abuse area is that family therapy is supposed to be terrible. The prevailing wisdom is to set up for wives to be asked to come in to marital sessions and to open up. They open up in sessions, they go home and the man just beats them. That's probably true in family group cases. What also seems to be true is that in the vast majority of these marriages, for whatever reason, women either remain in the marriages, or if they are separated from their husbands, go back to their husbands at some point over a period of several years. This is despite the sort of ethical grounding or solidity in saying that we should not bring these people together in the room outside of the therapy session. They aren't together in the room by and large. So what's that all about and how can we work with that effectively?

DR. URSANO: Has this been effective with multi-family groups?

DR. STEINGLASS: Yes, what we have is a program that is a multi-modal program. It has both individual, marital and multiple family, multi-couple. It also has groups for the abusers and groups for the spouses. It works in a fairly intensive fashion from that point of view. The guts of it is that it assumes that the people involved have a broad range of feelings about each other. Some of them are very nasty feelings, some of them are very loving feelings. The trick in the therapy is to acknowledge the loving feelings at the same time that you're taking a therapeutic stance that the violence is unacceptable. Those don't have to be incompatible positions. There really isn't anything that's inconsistent in taking those two positions. You don't have to choose between these two. They each have their place and they can both be put on the table. Another way of saying it is that one tries to identify and take a strong stand against the abuse of power, the use of physical differences and the abuse of power in relationships that comes from utilizing these physical differences. One does take a strong stand against that. At the same time, one honors those things in the relationship that attracted people to each other and continue to attract people to each other. The assumption is that what you're basically saying to her is, "You were such a jerk for marrying this guy." This is ultimately an untenable therapeutic position to be in because in order to accept your therapy model, this person has to go through a self-denigration process. That's the basic idea.

It turns out that this isn't true across the board for all situations of spouse abuse. In situations in which men can identify their loving feelings for their wives, the situation seems to work fairly well. It's a small project They work with fifty couples so far. So far to our knowledge, none of the couples have repeated the spouse abuse.

DR. URSANO: This was how many sessions?

DR. STEINGLASS: It varies. It's not a protocol. It's kind of freewheeling. It has actually varied, but it's usually six months to a year.

DR. FULLERTON: Do you notice if the media has had any effect on that type of family, like some of the cases in the past couple years?

DR. STEINGLASS: Not that much in New York. We met with a woman who's sexually abused, so she's primarily interested in sex abuse. She's about to mount a public relations campaign in the state of Vermont targeting perpetrators of sexual abuse and trying to get them to volunteer for treatment. She's done a remarkable job of this in terms of the way she's approached it. Her area is marketing. She's lined up all of the people in the state. They picked it because they felt they could do it at the whole state level. She has the support of the whole state judicial system for the program. She's met with all of the therapists in the state who have identified themselves as having expertise in this particular area. There's a system in place for anonymity in which people can call up on a hotline and identify themselves by number and then are assigned to a therapist. Apparently there's something being done with the record such that they're not placing themselves in legal jeopardy for the initial call and evaluation. She's just interested in seeing whether anything can be done to engage perpetrators in treatment. The current wisdom is just lock them up and throw away the key. She feels that there isn't enough space to lock them all up and throw away the key, so let's try this other approach.

What we've done is really focused on this other issue of trying to get at the combination of feelings that are twisted in these relationships and acknowledge and honor the positive feelings at the same time. There have been a series of papers written in Family Process and elsewhere about this.

DR. URSANO: I suppose disorders with higher rates among women, in terms of the multi-family groups or just the type of families, are somatization, depression, and suicide attempts?

DR. STEINGLASS: Peggy Papp on our faculty has a project currently looking at a gender sensitive approach to treatment of depression in women. She has a sample of women who have been hospitalized and she has a marital therapy approach for it, to get at some of these differences between men and women in terms of what they need from each other for problem solving. To oversimplify it, what she says, (and I think it's been supported in the research literature as well), is that what women want from men in relationships around problem areas is that men listen to them. What men want from women in areas in which women have problems is a clear cut protocol for how the man can solve the problem for the woman. Men are always trying to solve the problem, and women are always saying, "I don't need you to tell me what to do about this, I just need you to basically listen and understand the problems." She has a short-term therapy model that basically breaks into that pattern and anecdotally has been very successful. Nobody has been rehospitalized yet.

If you want to partner with us on any of these things, we are looking for research partners that could take some of these models and apply them in a broader level, in a clinical population. We have a relatively small clinical operation. What we're very good at is developing really quite inventive intervention approaches. In a number of instances now, we have been able to manualize them so we can get to that stage and we would love to talk with a clinical site with a good research interest in treatment evaluation.

DR. FULLERTON: It will be interesting to see if the models vary over different cultures, including maybe the military over time. I was thinking in relation to your description of what men and women want from each other, would that have been different twenty years ago? Is that different culturally?

DR. STEINGLASS: What I found in comparing my clinical work here in Washington, D.C., versus my clinical work in New York, is the kinds of problems that people here bring to therapy as opposed to New York.

DR. FULLERTON: That's interesting.

DR. STEINGLASS: The government is so dominant a force in people's lives. I used to work for the Justice Department, but basically the same issues and the same relationship exist between inside and outside. It's one huge suburban environment with tremendous segregation. I dropped my bag off at the Shoreham Hotel, and I decided I would take the Metro because I love the Metro. You get on the Metro and everybody is white. I was startled because I would ride the subways in New York all the time, and the variety of languages and colors and everything in New York city is just phenomenal. The models that get developed have to have broad applicability because there's so much variability. There are much stronger feelings of ethnic identity with people in the city. They talk much more openly and experience their ethnic identities much stronger than my experience here.

DR. URSANO: Probably we should formally stop and thank Dr. Steinglass for consulting with us and stimulating our thoughts. Thanks you.

The Suicidal Female

Alan L. Berman, Ph.D.

We're very pleased this morning to have with us Dr. Lannie Berman. I will try to touch on some of the highlights of his very distinguished career. He is currently serving as Executive Director of the American Association of Suicidology. He has also served as a Past President of this organization. He is a 1982 Schneiderman Award recipient for outstanding contributions in research in suicidology. In addition, he serves on the Board of Directors of the National Committee of Youth Suicide Prevention.

Dr. Berman received his undergraduate degree from Johns Hopkins and his Ph.D. from the Catholic University of America. From 1969 to 1991, he served as a tenured Professor at American University. In 1991, he changed the appointment to that of Distinguished Adjunct Professor when he was named Director of the newly established National Center for the Study of Prevention of Suicide at the Washington School of Psychiatry.

He has published over seventy professional articles and book chapters. In 1994, he served as case consultation editor of The Journal of Suicide and Life-Threatening Behavior. He continues to work as a consulting editor for this publication and also for two other journals and he writes a column for The International Journal of Crisis.

He has testified on many occasions before Congress. Before we started recording, Dr. Berman also alluded to the fact that he appears frequently on media shows to discuss suicidology. We will introduce ourselves before Dr. Berman begins.

DR. GABBAY: I'm Dr. Francie Gabbay. I have talked with you on the telephone. I am here in the Department of Medical Psychology.

DR. URSANO: I'm Bob Ursano.

LTC NORWOOD: I'm Ann Norwood from the Department of Psychiatry.

DR. BERMAN: Where would you like to start?

DR. URSANO: Gender and suicide.

DR. BERMAN: Gender and suicide. That sounds like an appropriate topic. Let's go from the macro to the micro scale and try to focus on what it is about gender and suicide that is most intriguing.

Statistically, the epidemiology of gender and suicide is fairly clear and has been stable for a long time. Men commit suicide three to four times as frequently as women, overall. Women attempt suicide at some multiple relative to men, and it is a factor of at least three or four and probably considerably higher, but the data is terrible.

One area of needed investigation is to have a good epidemiologic study of non-fatal suicidal behavior that goes beyond emergency room admissions and/or asking individuals, "Have they ever attempted suicide?" Those surveys that approach that latter estimate invariably suffer from terrible methodological problems as in how to ask the question; what is the subject's understanding of attempted suicide; what is the relative lethality of the attempt? Medical consequences fall through. Contagion reinforces what happens. The data is not very good.

We really don't know much about the epidemiology of attempts but for hospital admission records which say that women clearly out-number men perhaps by a factor of four to one in admissions, or in terms of at least emergency room (ER) treatments. The frequency overwhelmingly points to the overdose of prescribed medication and, secondarily, of over-the-counter medications.

When we go back to looking at completed suicide, it's clear that women increasingly are using firearms. Men consistently have chosen firearms at a level of roughly two out of three. Women now use firearms as the modal method of completion but at a considerably lower level than men. Men use hanging as the second most frequent method; women still use overdose. Even if one is intending to die when one attempts to suicide by overdose, the time required to produce any kind of serious medical consequence allows the opportunity for ambivalence to be acted out in the obverse where one may change his mind or one may allow opportunity for rescue. This explains, in part, why women end up in the non-fatal column more than men. Interestingly, when women choose the same method they tend to be less "successful," and that I think is an interesting area of study. Is that a matter of familiarity with the weapon or relative aversion to serious harm even though the attempt may be high? That study has not occurred.

The main consideration, I think, regarding why women end up exhibiting non-fatal suicidal behaviors more often is that they are more relational in their orientation. Their behavior is much more intended to communicate and to connect, usually with a premise that they are disconnected and not being heard or not being understood. Thus, the suicidal behavior for women appears to be, in part, protected by the interpersonal attachments that women are capable of making relative to men and may be intended to re-establish any broken attachments.

Men seem to operate traditionally at least with more of a performance context. The suicidal motive is based more in failures of achievement, whatever that means; failures in competition, failures in accomplishing goals and not as much embedded in an interpersonal context. That, too, may be changing as gender roles change over time, but historically that seems to be true.

There may also be some biological differences which we can talk about including whether there is any clear evidence that men have a little bit more of this or a little less of that; that may make a difference. The data is not all that profound at this point. Probably the most significant area of research at this point is in terms of biochemical explanations or causation for suicide, but there is not much that I've seen at least in terms of gender differences here.

DR. URSANO: Are things like the likely day of the week similar for males and females? Is there a likely day of the week?

DR. BERMAN: That's a good question. The data is not very good, first of all, because it is recorded from death certificate data, secondarily from ER admissions. Death certificate data is notorious for recording essentially when the body is found, not when the suicide occurred. The estimates of time of death are just terrible. We don't know much. Day of the week tends to spread across the seven days with a slight peak on Mondays. Blue Monday is still considered to be a reality, but I wouldn't trust it as far as I could throw the data. I honestly have never seen any analysis that has separated males and females in terms of day of the week. That's not to say it hasn't occurred; I just haven't seen it.

DR. URSANO: I assume no one has looked at it in terms of where the menstrual cycle falls?

DR. BERMAN: That has been looked at with absolutely no support.

DR. URSANO: No differences?

DR. BERMAN: No differences. Any of the sort of prehistoric beliefs we had about men and women tend not to be supported.

LTC NORWOOD: Are there any areas of difference that come to mind in terms of men and women aside from the mode?

DR. BERMAN: I'm trying to recall off hand what we had. There were some essential differences, again, primarily in terms of method, primarily in terms of motivation, context, and consequences. Beyond that there are very few real substantial consistent differences that are reported.

There are the demographic differences. For example, marriage appears more protective for men. Therefore, the loss of a relationship, the marriage, separation and divorce, appears more profound for men. Age-wise, the male/female difference predominates in the elderly group where it goes up to something like ten to one in terms of completions relative to this average of three- or four- or five-to-one in other age subgroups.

Racially, black women barely get on the charts, historically. That is also increasing, but the rate of increase among young blacks, for example, is really quite considerable relative to the rate of increase in young whites or black women. For young black males, I think the rate of increase was something like 120% for essentially the adolescent black male group in the last decade. Whereas the rate of increase for young black females was something like 18% during that period. Something is happening, as it always has, more for males than females.

I can't think of any other dramatic differences that aren't those that we would ascribe to differences in pathology and the relative prevalence of pathology A versus pathology B, which might explain a little bit more why suicides occur. Let's take one for example. The rate of diagnosable depression appears to be more common among women. Since depression and suicide have a fairly strong relationship, one would think you would therefore have more suicides. In truth, the relationship between depression and suicide appears much stronger for suicide ideation and non-fatal suicidal behavior. It gets weaker when you look at the completion data. Of course, with completion data you're always stuck with retrospective analyses and psychological autopsies, and so we're diagnosing in absentia. We don't always have medical records or good documentation prior to the death to be able to determine well enough what the diagnosis should have been. So that, too, is one of the differences but it's explained by the differences in the prevalence of depression. The rate of conduct disorder and antisocial personality is greater among males, and that, especially in the youth suicide samples, has been the predominant diagnostic risk factor for completed suicide.

There is a good debate there in terms of co-morbid diagnoses with substance use and substance abuse and with depression; the notion that drugs and alcohol may cover the depression or may be self-medicating behavior. Acting out behaviors common to males may be the way that males perform rather than express their emotional lives. Co-morbidity is a very strong risk factor. When it's clear we have depression plus substance use or depression plus conduct disorder or depression plus borderline personality then suicide rates are going to increase within that subgroup.

DR. URSANO: Suicide rates and/or completions?

DR. BERMAN: Rates of completion. The tough part in most of our research in this is that the study of suicide for years has been the study of attempted suicide. It is poorly defined, focused on hospital admissions or ER admissions, and generally of younger females. This doesn't say a whole lot about who those people are who end up in the morgue because of these gender differences in rates of completion. In the last ten years we have not learned much about completed suicide. There is only one true prospective study with a sample, I think, of eleven cases. All of this is retrospective and filled with systematic errors that we just, over time, hope to try to cleanse. It just isn't easy studying dead bodies.

DR. URSANO: Although there is a high-risk group, and I presume that the risk-takers would become the population to study longitudinally, those who have attempted --

DR. BERMAN: Yes. Again, you're talking about more females than males who have a history of attempt.

DR. URSANO: So you have a big sample to identify?

DR. BERMAN: Yes. Men are much more frequent as first-time attempters, and that means they end up as completers. They'll make their one attempt and they'll go to the morgue with that attempt. What we're beginning to do is recognize that we have a tremendous number of subgroups. If we could find more homogeneous groups to study and define the first-time male attempter who survives, and probably sub-divide that group into two or three groups in terms of intent relative to first-time females, we would have a much better study. That work just isn't being done with any frequency. Really the best work, probably the majority of the work now, is being done in Scandinavia. There are a couple of centers here in the States with good researchers.

DR. GABBAY: What's known about the relationship between suicide and impulsivity as a personality trait?

DR. BERMAN: I'm hesitant because there was a recent study which found no relation, which really shocked me. I have always believed, and there have been any number of studies which have described, two gross groups; those who plan and those who behave impulsively. Impulsivity as a risk factor has always seemed to me to be very clearly involved, even with planners, because you always have to deal with the question of, "why now." There are any number of case examples where you have people who have spent a lifetime thinking about suicide, organizing or planning suicide and living always having the cyanide in the nightstand. The behavior occurs typically on impulse in a context where it's understandable. It's tough to study because, again, it's like trying to predict the peak on the oscilloscope with no prior history for that particular behavior.

Impulsivity is associated with a fair number of the diagnostic groups that have been defined as high-risk groups, if you put the retarded depressions over to the side. If you take any of the other primary groups, schizophrenics, alcoholics, drug users, or borderlines, impulsivity pretty often is one of the symptomatic criteria, or something close to impulsivity. Rage is another good example. Suicide is a hostile behavior to self and usually to others if there is an interpersonal system.

I was just at an international meeting where Bob Golney from Australia presented a study that found no difference between a suicidal sample he had and a non-pathological control group on a measure of rage. Now I have to throw that out the window. I never quite know what to do with contradictory findings other than just let them sit until ten years pass and you get a better range of research.

Clearly, poor control might be a better way to look at the data. Any evidence of the inability to control impulse life or reactivity to stressful stimuli appears to be highly associated with at least the absence of a protective factor if not actually a risk factor. Any sub-group that has evidence of the ability to control responses to frustration or frustrating stimuli is less likely to engage in suicidal behavior. But again, this is such a complex behavior that until we have good multifactorial types of studies, it's very hard to isolate one variable and find evidence that it truly is a strong risk factor.

DR. GABBAY: With regard to the "why now" question, I'm sure this is almost impossible to study, but what is the data on whether or not there is usually a clear precipitating stimulus?

DR. BERMAN: That's much better to discern. The studies tend to suggest that for roughly three-quarters to 80% of suicides for which there is investigative material, one can discern one or more precipitating events.

DR. GABBAY: Do they look at what the rate of those events might have been in a group that didn't have that?

DR. BERMAN: Yes. When you do that, you find, "so what?" These events are not profound events, other than they may be the additive. More than likely, the primary issue is not to focus on the stress but to focus on what was the decedent's ability to tolerate the stress?

I was reading a case this morning for a forensic hospital malpractice case where there was a 66-year old man admitted to the hospital for an overdose and wrist-slashing, clearly intending to die, consequent to a threatened bankruptcy and the loss of his business. That's a significant issue in anyone's life, and at age 66 it's profound. He had a heart attack and bypass surgery four years earlier, and that may well speak to an ongoing post-coronary depression and/or just simply a weakened ability to tolerate the kind of things that would probably make most of us pretty anxious or scared.

It wouldn't drive me to suicide if I was going bankrupt. I find life very exciting. As you read the case, you see the developing picture of a man who was decompensating as he was getting older in terms of what he had built his life for. His two children were working in the business, so it wasn't the bankruptcy per se, rather it was more that his family was falling apart. His ability to be responsible for this family fell apart, and his role fell apart. I think that's one of the problems we have in understanding the role of stress in almost anything. We look at the discrete variable and we don't really look at the meanings it has for the individual or the multiple meanings it has.

DR. FULLERTON: I think, also, when Dr. Gabbay asked the question she said, "a clear precipitating event." Obviously, that varies by a lot of things. It might not be as clearcut in a schizophrenic. It might be nothing to someone else. However, it might have all sorts of meaning, whatever the event is, to the other person and you don't get it unless you key in. The reason might be kind of off-beam but not for that patient.

DR. BERMAN: That brings to mind a fascinating piece of work that Keith Haughton did in England twenty years ago. I think it was mostly adolescent attempters. He took one hundred consecutive admissions to an inpatient unit and asked them the reasons for their suicide attempt. He took their verbatim responses. Then he asked the admitting psychiatrist to explain the reason for the suicide attempt for their patient, and the concordance was zero. The question is, "Whose data are you going to trust?" We read things that our patients are going to deny, or we don't believe them. It's just difficult stuff.

DR. URSANO: How about multiple suicides?

DR. BERMAN: As in two or more at the same time?

DR. URSANO: Yes.

DR. BERMAN: It's not with much frequency.

DR. URSANO: Together or contagion? Somewhat separate but occurring at the same period of time?

DR. BERMAN: Well, there are three issues. You have homicide/suicides, which may be covert suicide pacts, but clearly or ostensibly you have a perpetrator and a victim.

DR. FULLERTON: How frequent is that?

DR. BERMAN: Not very frequent. We estimate three hundred or four hundred cases in the States per year, which is 1% to 2% of the data. Within that type, you have several subgroups. The modal type is a husband and wife or lovers; a common-law relationship where typically the female, under conditions of abuse, threatens to leave the relationship and the male, being unconsciously dependent upon the woman but consciously rageful at her, kills her in rage out of her threatened abandonment of him. Then he has destroyed the object upon which he has been dependent. Either he has been suicidal prior to that or he has nothing left to live for because he has been enmeshed with this partner. That probably accounts for 80 to 85% of all two-person homicide/suicides.

The next most common type is an elderly couple where one partner is the caretaker for a dependent, invalid spouse, and then the caretaker develops a threat to his or her physical ability to continue caretaking. So it's in effect a mercy killing. "He or she can't live without me being available to care take. I now have the following medical problem and am going to die anyway, and my role is gone." So it's an elderly homicide/suicide. Often times, by the way, with a gun supplied by a child to help this couple protect themselves from predators. That may be another 10%.

Then you have 5%, a very small group, that may be the Susan Smiths of the world, if she indeed intended to take herself with the kids, which is much more common in Japan than it is here. A parent/child suicide is a caretaker relationship where the parent is suicidal and says, in effect, "My children can't make it in this world without me being around."

Then you have suicide pacts which are also fairly rare. They tend to be common among adolescents. Even there you have a dominant and submissive partner, sort of a folie a deux with one partner leading the way and the other one being so gone or enmeshed that she, oftentimes, goes along with the first person's suicidality.

DR. FULLERTON: Is there a high percentage of that type that are more gesture/ideation? It seems like there's something about that. I mean, actually the difference between threatening or making the gesture and actually doing it. It seems somehow like it might be higher in that type actually not doing it, because you have two people.

DR. BERMAN: Yes. We're talking about a very rare event. If there are fifty cases in the States per year I'd be surprised. There was just a case in Connecticut of twelve or fifteen high school girls who had a suicide pact and were ostensibly going to do this.

DR. URSANO: I think a couple did.

DR. BERMAN: I think one actually made an attempt but there was an intervention before anything more happened. So you will see high school groups of ideators. If you get a group of kids involved with heavy metal music and punk and that sort of thing, you can pretty well guarantee that there's a lot of mutually-reinforced self-destructive behavior. Whether it turns to mutually-reinforced suicidal behavior is probably far less common.

DR. FULLERTON: The chance of actually carrying through with that type of thing is what?

DR. BERMAN: Well, it really depends, I think, on how suggestible and how weak the egos are of those who follow, and how suicidal the dominant member is. Contagion follows this model. I did a consult probably fifteen years ago at Prince Georges Hospital where they had a day treatment center, and as I recall, they had something like fourteen members of this community, most of whom were young adult male ambulatory schizophrenics. The oldest member of the community was a sixty-two or sixty-six year old man, so he was the leader. He was the dominant member of the community. He made a very serious suicide attempt, and within the next ten days to two weeks there were something like four or five other attempts out of the fourteen. Six or seven of the remaining people were communicating suicide ideation that hadn't been there, ostensibly, before. So something like twelve out of the fourteen members of this community were highly suicidal, and they had a staff of three or four people, which becomes rather taxing in any kind of unit to deal with that.

So you get contagion and imitative behavior when you have either a significant or dominant member of the community being suicidal. Then you have suggestible and you typically have pathological others who use that initiator as a stimulus for or as a permission giver for their own suicidality to emerge.

The research has focused on celebrity suicides. Marilyn Monroe's suicide epidemiologically produced, I think, a 12% increase in young female suicides; 12% over expectation, in the next thirty days. It doesn't always show. We just studied Kurt Cobain's suicide in Seattle and found an increase in suicides in the seven weeks following his suicide relative to the prior year before the date of his death. Freddy Prince's suicide in the late seventies produced an increase in young Hispanic suicides by gunshot, (which is exactly what he did), for seven days. That's a few that you wouldn't otherwise have seen.

So one of the questions is, "Is this pushing forward suicides that otherwise would have occurred, making them happen now versus months from now? Or is it creating suicides that would not have been there?" Again, that's a tough question to answer unless you have a prospective study.

There is evidence of contagion. We have a tremendous number of anecdotal cases of communities, high schools, that sort of thing, where you will have one, two, three, four events in a short period of time that seem to be connected. They are more connected if there's a lot of publicity. There's a dose-response effect if you can measure the level of publicity that the initial suicide gets and the response will be parallel to that for a period.

DR. FULLERTON: What about after the death of someone, not by suicide? Is there an increase in suicidal behavior?

DR. BERMAN: In response to a natural death?

DR. FULLERTON: Well, any event. All of a sudden I thought about Kennedy and I wonder whether that precipitated an increase.

DR. BERMAN: Well, contradictory data, but yes. In some instances they found any number of stimulus deaths will produce suicidal behavior. David Phillips is a sociologist in California who has done most of this research. Basically, he has found that when you have single airplane accidents, single-plane crashes with publicity, you'll find suicides go up. He has found it in one other area I can't remember offhand.

DR. FULLERTON: The people are not related at all?

DR. BERMAN: Not related but --

DR. FULLERTON: Geographically or the people?

DR. BERMAN: There are some variables that control, but he is the only researcher who has really done any work in this area; and again, it has not necessarily been validated elsewhere. In England, there was a series on the BBC which had a suicide of one of the main characters and they were able to document increases in suicide following the showing of this series. In Germany, there was a presentation which involved a railway suicide and they were able to document increased frequency of railroad suicides.

DR. FULLERTON: It seems like with the advent of videos and that type of thing, how passive or active the behavior is, is overall what I'm getting at. If a person seeks out a videotape of someone who has died, like Janice Joplin or something, then goes and seeks out that tape versus something just happening and the person being affected. In other words, what sort of control does the person have? Like you said, is this a person with suicide waiting to happen? Let's say maybe that admired person or that leader did something else. Is it simply the imitation or is it something that there's more contagion?

DR. URSANO: That's really part of the mechanism question. To what extent does it comprise modeling? To what extent is it copycat? To what extent is it loss of an idealized other? I'm sure it's all of the above.

DR. BERMAN: That's right. In the Cobain study, we were looking for specific cases where there was clear evidence that the suicides that followed were heavily invested in grunge music, owned Cobain's music or had spoken about Cobain. We had a number of criteria defined that this was clearly an identification.

On the other hand, it's hard to believe that all the young female suicides that followed Marilyn Monroe's death were identified with her. They may well have just simply seen this as a model of successful womanhood. Bob Lippman is a psychiatrist in L.A. who believes that what happens here is that a non-specific loss of hope is produced. "I'm an average-looking, average female and not all that successful at those things that matter to me, and here is this star and she couldn't hack it. If she couldn't hack it, what chance do I have?" Obviously, there has to be a context for that. There has to be a predisposition, and probably based in some pathology if not just depression that would explain why that would move them therefore to suicide. Marilyn Monroe could be one of 1000 potential role models.

DR. FULLERTON: The immediate context might hinder. I think Marilyn Monroe died in the summer; I think it was August. It seems there is something about the context of that happening. Kids are out of school, or adolescents are out. There's less structure. I don't know. People are anticipating starting school. At that time of year there are different changes.

DR. BERMAN: There was a suicide earlier this week of a Dartmouth senior, but it's summer, so the suicide occurred at her home in northeastern Massachusetts. She was, first of all, a female, which is already unusual, and she was a star. She was the first three-sport co-captain at Dartmouth. She was reported to be well-liked by everyone. Obviously, she was under some pressure and stress to perform and succeed.

In the first initial reports of the suicide, nobody had any particular understanding of why she killed herself. So there was a lot of media involved in it right away. The Boston Globe had a front page news story. The Dartmouth news office was being overwhelmed with requests for interviews. Associated Press picked up on it. This is the kind of thing that happens. Here's a star in a small community. It is not a big school and not a big town. Had this occurred during the school year at the university, the impact and effect on subsequent suicidal behavior, I suspect, would have been much greater than it will be because of when and where it occurred. That kind of event, which doesn't have any clear attachment in its publicity to the problems she had, implies that suicide can strike anybody. This is a virus that somehow got into this wonderful woman's system. People are going to misinterpret and over-interpret and are going to respond to the wrong message if publicity reaches somebody who is vulnerable to that.

DR. FULLERTON: It seems like that could go the opposite way from contagion. In other words, maybe in a contained unit like an inpatient unit, where someone regresses and the other patients on the unit and staff become frightened; the leader type thing. What's to say that the group might not go the other way and become terrified that they might be driven to that?

DR. URSANO: You were talking about the question of social attachment or social embededness. This clearly relates to the military in terms of units and unit cohesion. The question that came with that, the far extreme, was, "What are suicide rates among homeless, in which we have the experiment of presumed lack of total attachment, in contrast to units where one may have strong families?" This also raises the cultural question, and cross-cultural studies might address some of that, also. That's the role of whether it's small group affiliation, not just family. Work as well would be of great import and the contribution of small group affiliation or group affiliation to risk and/or prevention.

DR. BERMAN: Again, it's very complex. The more cohesive the subgroup within which one lives or works, the more cohesive the family, the more protective. In contrast the data almost universally will support that the more family conflict and more family disruption, the more likelihood even of higher suicide rates.

DR. URSANO: Is that true of work settings? Have we done studies of large organizations such as IBM or Coca-Cola?

DR. BERMAN: There is no study that I know that is focused on suicides at IBM or Xerox.

DR. URSANO: During down-sizings?

DR. BERMAN: One would bet there are lots of reasons; a threat to one's attachments, losing jobs, losing economic security, et cetera. The data is pretty strong vis a vis unemployment and suicide. What's harder to assess and yet probably much more powerful is the threat of any loss in terms of the anxiety it produces and the unknowns that come with it. That has a stimulus for suicidal behavior.

DR. URSANO: Such as we were talking earlier about at George Washington. Things are stirred up in the GW Hospital this morning.

DR. BERMAN: Right. I can imagine. The city of Washington, in general, is an example of people who are threatened with their livelihood and all the meanings that has. That will stir lots of potential affect. Whether that affect is dys-regulated and there aren't sufficient other attachments will better describe who is at risk.

DR. FULLERTON: Or the Great Depression when people jumped out windows.

DR. BERMAN: Actually, that's a myth. Yes, they did; but no, they didn't in any great number. I'm fascinated by suicide and the homeless. There has been very little work done, and the apparent data says there is suicide ideation among the homeless, higher but not disturbingly higher rates than you might expect. We don't have data about suicidal behavior yet. My hypothesis would be that, "If I lost the security of my home and the attachments that it represents to me and I had to live in the street, that would be a pretty significant stressor in my life" and would also represent other losses, and you would find higher rates of suicide.

In contrast, it may be that the very fact of homelessness (that is, the evidence of one's striving to still make it by being homeless) says that there's more going for a fair proportion of these people. Now, some clearly are mentally disordered individuals who otherwise would have been institutionalized. Some clearly have substance abuse problems, and others are just straight homeless people. There are probably ten other types here. I don't know of anybody yet who has looked at sub-groups of these people and their suicidality, but my bet is that the suicidality among the mentally disordered homeless is probably not a whole lot different from the suicidality of the institutionalized mentally disordered. Somehow they're still on the street and they're still striving. That represents something on the protective factor side of the ledger.

DR. GABBAY: Is there a relationship between socio-economic status and suicide?

DR. BERMAN: That's another very tough area to study. The answer basically is no, but the data is compromised. People with income are more likely to have life insurance. The under-class does not typically protect themselves with life insurance. Some of the data of suicides among the upper class is compromised by disguised suicides because of insurance issues. That's a small piece of it.

Generally, anybody who has looked at the socio-economic status would say that there appear not to be any dramatic differences in any particular groups. The reasons for suicide will differ. More than likely, the key issue is the threat of or actual loss of status. The anticipation of bankruptcy, and someone said the loss of a stable lifestyle and good income, is going to be a significant stressor. A rapid change is a risk factor in any subgroup. If you have foreign-born immigrants coming to the United States, their suicide rate generally is higher than the natural born stay-at-homes versus those foreign-born who have been in the States for 20 years. It's the loss of attachment.

Communities that have ongoing rapid change will have higher suicide rates. Bedroom communities that have grown up in ten years from a farm community of six thousand to a suburb of one hundred thousand will, more than likely, have high rates of suicide. It appears to be the loss of status or the rapid change in one's attachments that keys the potential for suicide.

DR. FULLERTON: That would suggest that following community disaster there's a rise in suicide.

DR. BERMAN: Yes.

DR. FULLERTON: I wonder if that's different for technological versus natural disasters. For example, something like Buffalo Creek versus one that isn't as obvious, like a toxic spill or something. In northern Virginia there was that threat of something like CBW. You don't really know. It's almost better if it's out there and you can assess the damage, like with chemical warfare versus sending a bomb.

DR. BERMAN: Again, I think the key in looking at that is the community response. If there is a rapid assessment and an intervention and the community has resources and there are personnel brought in and there are opportunities for catharsis and support, my guess is that these events don't produce dramatic pathological outcomes relative to those communities that lack resources.

DR. FULLERTON: I wonder also if it might be gender-related having to do with social support?

DR. URSANO: I want to go back to the cross-cultural issue which you raised. Do we know anything about single parents?

DR. BERMAN: No. I don't offhand know of any study that has focused specifically on single parents. There is a lot of epidemiologic study of marital status that is fairly consistent. Hierarchically, from most to least suicidal, it's divorced and separated which says acute loss. Widowed comes next, which may or may not be acute loss but still represents the loss of a lifetime attachment. Next is single, never married. Next is married. For some reason, married with two children seems to be the best place to be. That is one study.

DR. FULLERTON: It seems like the abruptness of something like that is a factor. You're preparing yourself in old age for the death of your spouse maybe versus the death of a child, which is out of synch, or if a spouse dies in the middle of life.

DR. BERMAN: It also depends on the degree of attachment or enmeshment, or the degree of independence. Some couples age parallel to each other and are fully able to sustain without their spouse, despite how loving the relationship might be. Others are in a mutually interdependent relationship.

DR. FULLERTON: How broad the support system is.

DR. URSANO: You presumably don't have any studies of that other group that cohabitate, living with the significant other.

DR. BERMAN: I would suspect that's somewhere in the better end of the continuum.

DR. URSANO: I raise those because they are prominent issues for the military community, both the single parents and also living with a significant other for a substantial part of our population. To the extent those are either risk or protective factors, they have become important.

DR. GABBAY: Was this rank ordering for males only or is it the same for females, in terms of risk?

DR. BERMAN: That's generally true for both genders. The data point to the relative importance of marriage to the male. Males don't do well unmarried relative to females.

DR. GABBAY: The rank ordering might be the same for both genders, but the increase in risk from one stage to another might be more for males?

DR. BERMAN: Right. It's a good question. I'll try to go back and look at that.

DR. URSANO: What about the cultural issue? The cross-cultural? What do we know about cross-cultural studies, to go back to a comment that you made, which I have also heard, about immigrants coming into the country showing higher rates than their country of origin. The example in the military might be someone who is first generation coming into the military in contrast to a third-generation Hispanic coming into the military. I don't know that anybody has ever looked at that. Probably the rates aren't high enough.

DR. FULLERTON: You mean generation culturally or generation military?

DR. URSANO: Generation in this country as contrasted to someone who is fully acculturated. The level of acculturation stress would be higher presumably based on how close you are to your country of origin versus having been in this country.

DR. FULLERTON: Or to the military, in acculturating to the military community, if your parents --

DR. URSANO: Right. Well, these wouldn't have been in the United States at all, so they wouldn't have been in the United States military.

DR. BERMAN: The hard part in this, again, is that when you do empirical studies, you choose a variable and you find an operational measure for that variable. You can operationalize what you just said and measure first versus second generation. What you aren't measuring, which may, it seems to me, be more important, is the subtle meanings of all of that. For example, who immigrates? Why do they immigrate? Is this because they're going to the promised land? Is it a depressed easterner going to San Francisco to find wealth and fortune?

DR. FULLERTON: Then it's what they expect.

DR. BERMAN: Right. So the level of disappointment may be greater among immigrants. I just reviewed a paper which looked at Hispanic immigrants to California and found higher rates. These were young immigrants. The second question was whether they came with family members. Did they immigrate by themselves, these Mexican-Americans crossing the border as 18-year olds, or is it a whole family that comes in? Those questions tend not to get asked. There are a variety of support factors and underlying reasons that aren't measured in these studies. It's very hard to answer that kind of question.

DR. URSANO: The issue came up, which I know you had some contact with, around Haiti and suicides in Haiti.

DR. BERMAN: Right. I don't recall the specifics of cases, but I would imagine --

DR. URSANO: Several of them were Hispanic.

DR. BERMAN: Did anybody look at their pre-morbid pathology or personality?

DR. URSANO: No.

DR. FULLERTON: It seems like there might be a gender difference there in that the male is supposed to be the provider for the family. When you get to where you're going you find out this is really difficult. It seems like it might be felt in a different way by the male who is supposed to be earning money. In other words, with immigrants, there is the thought that, "okay, we're going to go here and it's going to be much better." Obviously, there's some hope I guess when someone immigrates. The pressure on the male it seems would be different than the pressure on the female.

DR. BERMAN: If they come as a family and the female's role is to maintain the stability of the family under these conditions, it may also produce great stress.

DR. FULLERTON: The male's role is really more out there.

I wanted to throw in something about people living together and not being married and suicide. It would be important also to look at the reasons why a couple lives together and doesn't get married. It might be more advantageous technically not to get married.

DR. BERMAN: How many different reasons can you pose for why somebody enters the military? Two? Twenty?

DR. URSANO: Four hundred, one thousand?

DR. BERMAN: In the study of military psychology, is there any study that has sub-grouped those reasons in looking at the various sub-populations of the military? I mean, we talk about recruits or we talk about enlistees or whatever the term is, but we don't look at differences among them before they come. So that's the level at which we do a lot of our research.

We're talking about global characteristics that presumably define everybody. We're talking about a behavior that stems from some kind of intra-psychic debate between what keeps me alive and what makes me want to die. We're measuring whether I'm single or married. It's almost ludicrous how we, at this stage of our research, are just not there yet.

DR. GABBAY: What about IQ? Is there any reason to think that either high or low IQ is related at all?

DR. BERMAN: Again, there's no clear association with high versus low. Empirically, there's no relationship. From an anecdotal perspective, cases are across the board. Again, I think the reasons might be different. I think you're going to find that there are more obsessive-compulsive suicides among the higher IQ's, more of the performance-related suicides or achievement failure suicides, that sort of thing. Bill Cosby used to joke about why black suicide was lower. It's because you can't jump out of a basement tenement. The reality is that you have different reasons for suicides among different economic and intellectual groups, and again, I think it's the change. An example is success depressions leading to suicides. Someone who gets a promotion should be on top of the world but is ill-prepared to handle the stress of perceived new responsibilities and the novelty of moving to a new job status.

DR. FULLERTON: You have more to lose the further you fall.

DR. BERMAN: Or the more difficult it is if all of a sudden you're just faced with the loss of the security or attachment to whatever you had. You're broke and your homeless and you're surviving, and then all of a sudden you're given a home. My analogy is what happened when the slaves were freed. You can't just give freedom if you don't give the skills and the resources to make that freedom work. Someone who has lived a lifestyle or a work style for so many years, all of a sudden has to escape from that freedom. You have to attach in some way. You have to have something to attach to that is meaningful. I think it works both ways, and I think if we can sub-group people well enough we can understand the distinctions. We haven't done it yet.

DR. URSANO: What do we know about suicide in the Asian cultures?

DR. BERMAN: I don't know a lot. I have not paid a lot of attention to it. I know sufficiently little that I should just keep my mouth shut. There is a lot of study of Japanese suicide relative to any other. I know that female suicide among middle-aged Chinese women is high. I don't know anything about it. Obviously, this has to say something about the role that they play in their family or in their culture.

DR. FULLERTON: In cultures where women are more submissive, like walking behind the man, I wonder what effect that has? In other words, having most of their life not taking the initiative or whatever. I'm not sure how to say it.

DR. BERMAN: The sophistication of comparative international study, outside of a few countries, is very, very weak. I went to this international conference in June and heard wonderful presentations by good researchers from places where you would expect quality research. The Scandinavians are fabulous. The Australians are fabulous. When you started getting to the eastern European countries and when you start getting to Third World countries, we're talking about the most primitive state-of-the-art; just incapable of understanding a T-test. It's very difficult to start comparing anything but a few countries and using data that is collected by but a few researchers. Hungary has for years been at the top of the list and near the top of the list in any hierarchy of incidence of suicide internationally. However, the quality of research in Hungary is not very good. Some of the Germans are starting to study the difference between Germany now and Hungary. Now you start getting some sense of differences in the cultures and differences in media presentations of suicide.

DR. FULLERTON: Is there a correlation between rate of physical illness? I was thinking when you were saying that when we were doing the breast cancer literature research, in certain geographical areas the incidence was higher. It was in The British Journal of Psychiatry and it was a strange finding that linked to geography somehow. I was wondering if that varies.

DR. BERMAN: Herb Hendon did a study twenty years ago on suicide in Scandinavia looking at differences among Scandinavian countries and postulated that the differences in rates from high to low. I can't remember which countries had high and which had low, but the primary difference from this perspective was on the childrearing practices. Again, basically, the quality of nurturing and family versus more authoritarian versus more nurturing childrearing systems. That study was done from a psychoanalytic perspective, and a cognitive behaviorist may well have looked at different variables and found cultural differences.

If you plot out suicide in the United States county by county and post it on a map, it's top-heavy in the western United States. Nine of the ten states with the highest suicide rates in the U.S. are all in the inter-mountain region and Alaska. The exception last year was Florida. The exception a few years ago was Vermont. But nine of the ten were out west. The mid-Atlantic region and New England have the lowest suicide rate county by county.

DR. GABBAY: That sort of flies in the face of the idea of urban stress and crowding and all that kind of thing.

DR. BERMAN: You might think that. You would think that population density seems to be related to all sorts of ills, and yet in this case it looks like plurality. What's the opposite of density? Population lack of density.

DR. FULLERTON: Like rural versus urban.

DR. BERMAN: One thought is that if I am pre-suicidal and living in the West, I have more distance between myself and others or more distance between myself and a resource agency such as a community mental health center. Maybe that explains it.

DR. GABBAY: You've also got all those militia trigger-happy types.

DR. URSANO: You're talking about California and Oregon?

DR. BERMAN: They are not in California; in Nevada, Arizona, Washington, Idaho, and Alaska. That stretch through the mountains.

DR. URSANO: One could look at the rates of suicide in people by their state of enlistment and examine the same cultural issues controlling for relevant factors.

DR. BERMAN: That would be interesting.

DR. URSANO: One could ask to what extent their state of origin predicts or carries with them their risk of suicide.

DR. BERMAN: Somebody postulated that suicide and alcoholism are highly related. What they found was that the amount of liquor ingested East versus West was really not significantly greater in the West. The pattern of drinking was different, and there was a great amount of binge drinking in the West. You have probably more acute alcohol intoxication which may lead to more impulsivity or loss of control.

DR. FULLERTON: It seems also that something that might affect that is whether you're from there or you moved there, thinking of the military context.

DR. URSANO: What about intervention programs?

DR. BERMAN: What about intervention programs?

DR. URSANO: Other than that they don't work. What do we know in any systematic fashion about intervention or prevention of suicide attempts, or in prevention of contagious events after the outbreak of a suicide?

DR. BERMAN: Empirically what do we know? You answered your own question. Crisis intervention, hotline services seem to service young female callers who are low-lethality suicidal individuals, and there has been at least one study of an incident that is helpful to those people who called.

Highly suicidal types don't call hotlines. We don't have much in the way of gun control programs to study, but in those studies that have looked at cities or states with restrictive gun laws versus others that are permissive, generally they show lower rates in those places where it's tougher to own a gun.

DR. URSANO: So we would expect Virginia's rates to go up.

DR. BERMAN: We would very much expect Virginia's rates to go up. The CDC (Centers for Disease Control and Prevention) type people have a media focus and typical public health approaches. Looking at the agent of suicide would be one of the least controllable ways of going about that. There are so many agents you can truly control.

DR. FULLERTON: Like alcohol.

DR. BERMAN: If you reduce the use of alcohol and drugs you're going to more than likely see a reduction, but nobody has come up with a very good drug abuse program yet that I have seen.

DR. URSANO: In the military we can. We can in some settings prohibit alcohol. In other settings, we can limit Class 6 stores which increase the availability of alcohol, which has not been thought of as a suicide intervention strategy. Not very popular, either.

DR. BERMAN: Right. The chances are very slim that we're going to have much impact. We are talking about trying to get a meeting together with the CDC and the NRA looking for areas of commonality to start with this. They won't sit down with anybody in this sort of context.

DR. URSANO: That's a great idea.

DR. BERMAN: They will verbally express concern about suicide. That doesn't mean they're going to do anything about it. How are we ever going to make an impact with that kind of force against us? People have talked about supplying medics with prescription medication so that, if there is an overdose, there is an immediate available intervention. That's a reasonably good idea. Basically, the work on agents has focused on firearms and a little bit on drugs.

DR. URSANO: Maybe that type of intervention would have a specific gender effect as well, given that women are more likely to overdose. Are we, in fact, overlooking a possible way of early intervention that is gender-related by insufficient training of emergency personnel in the management of over-dosage?

DR. BERMAN: The most frequent mental health proposal for intervention is what we do, which is using a medical model. It's early detection and treatment. We really don't have any good data that treatment is effective. There is a macro-analysis of case control psychotherapy interventions with suicidal patients which looked at sixteen studies, only two of which showed positive effects of treatment. That's pretty depressing.

DR. FULLERTON: What was their reason for going into therapy? Was that the overt kind of --

DR. BERMAN: Working with suicidal patients or working with high-risk groups, that kind of thing.

DR. FULLERTON: What brought them into therapy? Was it primarily suicidal ideation?

DR. BERMAN: I can't answer the question. The bottom line is that the only studies that have shown significant impact, and again, psychotherapy research, outcome research is extraordinarily difficult to do, were on cognitive behavioral interventions, which is very systematic and very focused with very clear, operationalized and measurable outcomes. When you start adding follow-up over the long-term, most of the results go this way. It's very difficult to defend that what we do in treatment works.

DR. FULLERTON: It might get worse before it gets better.

DR. BERMAN: We hope not, but it might.

DR. FULLERTON: If you're working on some sort of anxiety-looking behavior and someone gets into the depression underneath or something like that, it seems like it might be curvilinear.

DR. BERMAN: In today's day and age we can't keep people in treatment for long periods of time. So the idea that we're going to have long-term interventions, even if we get early detection to work better, is not going to work. We can only look at short-term interventions which will only probably have short-term effects. That's the mental health perspective. If we could find them sooner and get them into treatment and get them to comply with our interventions, we know what to do. Truthfully, we probably don't know a lot about what to do.

DR. URSANO: Has anyone looked at the suicide rate during Operation DESERT STORM? During periods of war, what happens to suicide rates? Has anyone done that recently for DESERT SHIELD/DESERT STORM?

DR. BERMAN: You're more likely to know the answer to that in terms of what has come up in military medicine because that's where the study is going to get published. I have not seen it yet.

DR. URSANO: I mean national rates of suicide during that period.

DR. BERMAN: It's too early. National rates are always three years behind, so the 1992 rates just came out. DESERT STORM was when?

DR. URSANO: August 1990 to 1991.

DR. BERMAN: I can tell you that the rates from 1990 to 1992 are essentially stable. If anything, there's a slight decline but nothing that would answer the question because we're really asking it specific to those. What community of individuals went to DESERT STORM, number one? Was there a reduction in rates in young males? Secondly, was there an impact during the war, if you can call it that, nationally? My bet is that you're not going to be able to see that. It was a limited conflict, short term. The war and suicide data essentially looks at our major conflicts where there was such an investment of high-risk people into combat that that itself may be the explanation for why there have been observed decreases during the war years. We moved the potential suicides and put them into another way to express their aggression.

DR. FULLERTON: That's interesting. Is that true?

DR. BERMAN: Young males are a high-risk group. If you take five hundred thousand young males out of the population and put them into combat, you're going to show some effect, quite possibly. If the combat goes on for two, three, four years you're going to see data. I don't know how you do it for -- how long was Desert Storm? Six months?

DR. URSANO: Mobilization was seven months.

DR. GABBAY: What happened during Vietnam? Did the national rates go up or down?

DR. BERMAN: I don't think Vietnam's data was as descriptive of changes as was World War II. I don't recall offhand.

DR. FULLERTON: Also, there was the draft. People were getting drafted, which seems like it would make a difference, versus volunteers.

DR. BERMAN: Compared to now but not compared to the prior wars.

DR. FULLERTON: I'm saying in Vietnam.

DR. URSANO: Suicide rates by occupation?

DR. BERMAN: Yes. They are by occupation. There was a good review article that just came out, which I can get you a copy of if you want, and they looked at sixteen or eighteen different professions and occupations. For some there is good data, and for others the data is something to wonder about. Female physicians have higher rates of suicide in those years where females were less likely to be in the community of physicians. As things have balanced more you see the rates go down. Physicians, in general, when their rates are compared to the appropriate control group, don't have a dramatically different rate, but the early studies didn't look at groups of white males, for example.

DR. FULLERTON: High-stress occupations show up in the studies. Dentists are the worst?

DR. BERMAN: Dentists, chemists, and anesthesiologists in particular, some of which would simply suggest that it's availability of means. What nobody studied was, for example, was the rate of suicide among anesthesiologists higher because they actually use gas?

LTC NORWOOD: There's a high rate because of substance abuse in anesthesiology, I would imagine, because they're the highest-risk physicians for substance abuse problems.

DR. BERMAN: Or farmers.

DR. URSANO: The occupations that might be most comparable might be some of the medical care occupations in the military but also military police. Civilian police might well also be similar.

DR. BERMAN: Do you know Mike Ellis?

DR. URSANO: Yes.

DR. BERMAN: Mike is firmly convinced that the rate among military police is very high.

DR. URSANO: What about gender differences? We don't know.

DR. BERMAN: It seems to me the data should be very available. We're trying to do a study on police suicide with the idea that military police might be one available subject group if we can get funding, and we want to compare them to civilian police.

DR. FULLERTON: It seems like when you talk about occupation you're also talking about a pre-selected group to begin with. People who go into an occupation like police or fire-fighting or something may be more risk-taking, which made me then think about accidental suicide. I don't know.

DR. BERMAN: That's an oxymoron.

DR. FULLERTON: Right.

DR. URSANO: They are at risk for death from firearms, which would include suicide and accidental discharge.

DR. BERMAN: If you put a lethal weapon in the hands of any group of people for appropriate reasons, if it's a large enough group, you're going to have an increase in suicide over time in that group. David Brent's work in Pittsburgh simply looked at the availability of a firearm in the home for youth suicide. Irrespective of other risk factors, the simple availability of the weapon was a significant risk factor. There are multiple methods of suicide available in any home, but provide a gun and the gun will be used.

DR. URSANO: I was going to ask, do we allow firearms in homes on bases?

LTC NORWOOD: Most places you have to have it registered with the MP's (Military Police).

DR. FULLERTON: I wonder if there's a lot of people who have them?

DR. BERMAN: Before one enlists, does one have to be screened, psychologically? Is that done anymore?

DR. URSANO: No. They have a pencil and paper test that they take. The primary screening is basic training. In basic training, people who have difficulties are then referred for various types of mental health screening. It's a performance test, essentially, rather than an a priori screening test.

The only spot where screening is used in any systematic fashion is really for astronauts, because you can afford it. You really look for one in a million people at that spot.

I think our time is up. We thank you very much for coming.

Women in Disasters

Lars Weisæth, M.D., Ph.D.

Most of you, I think, know Lars Weisæth as Professor of Disaster Psychiatry at the University of Oslo and this year is the recipient of -- well, we're not sure of the name, but it is we think a lifetime achievement award from the International Society of Traumatic Stress Studies for Research in the Problem of Disasters. We're pleased to have him with us.

DR. WEISÆTH: Thank you. And thank you for inviting me. Very pleased to be here. I missed the conference you had in June on the role of women and war stress, stress in the armed forces. Actually I prepared a talk on women in the armed forces. And I was slightly surprised that I should talk of women in disaster. But I tried to bring up some points. But I thought, instead, Iwould take a little of this and a little of that. So I hope you forgive me for that.

The first time I became interested in the agenda issue was a study I did from 1976. We went to an industrial disaster. And, of course, we were interested in the reactions of the survivors. But then, which might surprise you, we became very interested in the responses during the disaster. And I share some data with you on what determined how the people responded during the disaster, a behavior pattern we call the disaster behavior. And we measured disaster behavior by using seven variables. Six of them allow themselves for observation by others. And since 80 percent had been in a group situation, we felt that we could collect some reliable data on really what people did during the critical minutes, when their lives were at stake, when others died, many were injured, and they had some serious stress exposures. You will not be surprised that disaster behavior turned out to be very important for the post-traumatic stress reactions. So, in fact, what's happened with our interest in disasters is that there has been a move from here to here and to the preceding phases of the disaster crisis management, for example, and to all kinds of preparedness, from mental to practical preparedness. Here the task is to be mentally aware of disaster, to be willing to think about it. The Red Cross defines preparedness as today to be willing to think about what might happen tomorrow.

Now, Dr. Jon Shaw raised an issue in his talk which I recognize from the findings we did here. We named that denial, those who had a strong sense of personal invulnerability. And we tried to measure this by interviewing people on how they had responded to alarms, false alarms, fire alarms, which was the way we operationalized this indicator of a strong sense of invulnerability. It turned out that those who had a strong denial had more shock reactions and more post-traumatic stress. Now, denial, as you know, is sort of an early defense. Some would say it's a sign of immaturity. We also found that there was a relationship between denial and lack of training, perceived helplessness or anticipatory perceived helplessness, probably induce this denial; defense studies of parachute jumpers showed, that with increasing competence in parachute jumping, you get a left-ward shift of the stress reaction before jumping - there is sort of a lifting of denial.

And the interesting test here is a DMT test, the defense mechanism test, which we use in pilot selection in NATO countries constructed by a Swedish colleague in the 1950s. We found that pilots who had high scores on DMT had a very much higher risk of dying from air crashes.

The theory was that if you have a too strong psychological defense, you discover the danger later. And you overreact in handling the crisis, and you have a higher rate of negative outcomes, more crashes. Why, then, did denial at this stage lead to this sense of vulnerability, this illusion ofcentrality that PTSD cases have, the conviction that it is going to happen again? Well, that would fit very well with an analytic theory of omnipotence, of immaturity that "This will not happen to me" as a part of the denial. But when it happens, you become the center of the person. So psychological immaturity turned out to be one of the individual risk factors, when we followed people through these phases.

Now, what did we find in terms of disaster behavior? This was the largest industrial accident we've had in Scandinavia in peace time. Six hundred jobs were destroyed. It came without warning and was an explosion that brought the factory down. There were 20 female survivors among the 125 who survived. Half of these women were industrial workers, and the other half were cleaning women. What I found about the disaster behavior was that 57 percent scored so well on these 7 criteria that we coined the phrase "optimum disaster behavior."

Now, you have to make sort of a choice here on what kind of behavior do you want people to display. For example, how much personal risk should a person expose himself to, for example, in trying to rescue others? Now, if you're a family father, for example, how do you measure this, then? We decided that, sort of an altruistic starting point, that anything which was good for your work mate was to be seen as positive disaster behavior. Your wife or your spouse might not agree with that, nor the company, nor society, but this was the way we rated it, meaning that if you did some heroic thing maybe because of guilt ... For example, we had a sea captain here who was unwilling to leave the building. He had to be the last one out. Now, he had been an ordinary industrial worker for a number of years, but, you know, the sea captain role is so strong. That was rated as a sort of positive disaster behavior. But clearly much of his behavior was motivated by anticipating guilt in case he escaped too early. Then 34 % showed an adaptive behavior. This means that they did not contribute very much to rescue. They were able to work in groups if they were recruited by people in this group. And they didn't pose any problems. I mean, they didn't do anything that increased the risk to their lives or to the lives of others.

The 29 who were scored in the maladaptive category largely could be said to have reacted in such a way that increased the risk to their lives or the lives of others. The most frequent reaction here was to be paralyzed, I mean, the shock reactions, paralyzed. And we had only two percent developed psychosis during that disaster.

Now, when we looked at correlations, we found that male sex correlated positively for optimal disaster behavior, while female sex correlated in a negative way.

Age also was a positive factor. And here you see some of the other ages. Now, this correlation turned out to have a very strong explanatory power. In our discriminatory analysis, we found that -- well, let's see -- that if we had only one piece of that predicted response, it was whether he had a high, moderate, or low level of training or experience (defined as anything that involved exposure to physical threats.) So we rated people on this, sort of made an index and

classified them in three categories. And you see that you can predict surprisingly well about disaster behavior if you have these variables. This is where women turned out to be different from men. The level of training in this group of women, although the numbers are small, as you understand, was much lower than in men. For example, 20 % of the males in this population had been hospitalized during their life one or more times because of accidental injuries. None of the women had.

In Norway women do not serve in the military. In contrast, all men serve obligatory service. So they get more training. And men after the age of 35 have, in fact, 4 times more accidents than women. So, if you look at the formal training that you get in our society and coping with physical dangers and the lifetime experiences you get, men collect more of these sorts of experiences. The main explanation why women fared worse during the disaster sort of could be seen then, as a reflection of lack of training and not as a result of psychological or any kind of biological or social vulnerability.

DR. POTH: If you say half of your women were cleaning ladies, --

DR. WEISÆTH: Yes.

DR. POTH: -- I mean, I don't know about your society, but in our society, it's not a very high ranking jobs.

DR. WEISÆTH: That's right, yes.

DR. POTH: Did those women do as well, you know, social status?

DR. WEISÆTH: No. That's a good question. But I don't think they differed from the ones who were industrial workers, but, you know, the numbers are very small.

DR. CARDEÑA: Sort of following on the personnel - you said responsibility roles was correlated with, that was responsibility roles in the factory I assume?

DR. WEISÆTH: No. This was, "Did you have a responsibile role in this factory or have you had a leadership role earlier in your life?" Both of them correlated. Remember that this came without forewarning. So there was no time to mobilize the structures, the organized response to disaster here. Everyone had to do whatever they could where they were. So this was a study, in fact, entitled "Spontaneous Leadership." But this is an interesting variable because I think clinically you would say that to have a responsible role is the best prevention against panic. For example, I don't think we have seen panic in the mother who was together with her children. The feeling I have (but this cannot be statistically studied) was that women were less challenged by the context. This was an industrial disaster. So I think the males were sort of more challenged because they had more technological careers and so on. Quite a number, in fact, had a maritime background. Many of them were war sailors and had a tremendous amount of war experience and disaster experience.

DR. URSANO: I think that's very important, Lars, and may not be as clear to much of this audience. With the age being over 40, this is a very high level of veterans in this population.

DR. WEISÆTH: That's true, yes.

DR. URSANO: -- in terms of having had previous direct war experience, --

DR. WEISÆTH: Right.

DR. URSANO: -- not even just war training.

DR. WEISÆTH: Yes. That's true. In fact, this town where this happened had the highest proportion of war-disabled. Only one town, which is much bigger than this small town, has a higher proportion.

DR. SHAW: Lars, did you look at education level?

DR. WEISÆTH: Yes.

DR. POTH: It didn't correlate?

DR. WEISÆTH: No, it didn't correlate.

DR. SHAW: Because, you know, Al Glass - I think in his study found education level predicted vulnerability as well.

DR. WEISÆTH: Yes, yes. Well, I will come back to some interesting data on women and educational level when it comes to the Chernobyl crisis, which we have looked at. I think we'll have to go back here and explain something about this town because there may be some limitations here on how much we can generalize. This was the whaling capital of Norway. Whalers had a very high income and very high status. So if something were wrong with you, you would go to Oslo and study medicine. If you could be a whaler, this was really what you --

(Laughter.)

DR. WEISÆTH: This was in the '40s and when the whalers became war sailors. So they served in the Atlantic most of the time. So the quality of, let's say, the intelligence level here of these industrial workers may not at all be comparable to what we will see in others. We also found that women had less problems with making difficult choices. These are maybe the four central dimensions of a disaster trauma as we have seen it: amount of physical injuries you get; the duration and intensity of a mortal danger; what you see and witness, particularly if you are a helpless witness to helplessness; -- it seems to be very traumatic -- and then 25 % in this population and also 25 % in the survivors of an oil rig disaster we studied.

One out of every four had to make very difficult decisions, for example, about saving your own life or trying to rescue others. We found less guilt, survival-guilt, among the women. And I think that perhaps reflects that they were not challenged to the same degree. If this had been a fire in a hospital, for example, or a kindergarten and the female employees had to rescue lives, maybe they would have more problems then.

So, to sum up some of the findings from this study, we did find that a high level of training helped you cope and was a protective factor. We found also that to have a remarkable personality and high intelligence seemed to play a role here. While, really, we were not able to study a role of leadership, group support, and other factors you would expect to be important, among the vulnerability factors, lack of training, as I mentioned, and persons with high denial and sort of a passive dependent personality structure seemed to do far less well. It was a non-statistical sort of trend that to be compulsive, the most compulsive persons did somewhat better than some others. It is a question of being in control.

But, then, the finding was that a high level of training, predicted, adaptive, or optimal disaster behavior, and very low risk of PTSD, while the traumatic effect of a maladaptive disaster response with cognitive disturbances (more than 30 % had very severe cognitive disturbances during this critical period and particularly overwhelming death threat, the feeling that "now I'm dying." - It's not that "I might die," but the feeling that "I am actually dying") predicted, of course, a post-traumatic stress syndrome, which was measured at one week.

Today you probably would call this an acute stress disorder, which again predicted PTSD 7 months later with a sensitivity of 96 % and a specificity of 89 %.

I must add there were very few secondary disaster stressors, no unemployment; they were guaranteed continuous employment and that no one would lose money. So the social disaster was sort of limited to a large-scale accident.

Women were over-represented after seven months and also in the prognostic study, the follow-up four years later. There were too few women in this group with a high level of training really to do any statistical study of that effect, whether this had the same protective effect for women as males. Risk factors included: having a high degree of exposure, having suffered early losses in life, and previous mental health came out as a very strong predictor, particularly problems with anxiety tolerance, also low motivation.

We did a particular study of psychological resistance to being called into the health control center. The research setting here was that I sort of worked in the company health service as a researcher and as an intervenor. The first 96 out of the 116, which we were able to measure psychological resistance in, whether they had any kind of psychological resistance or not, we found 15 severe cases of PTSD. This is after seven months. And the resistance was measured whenever we got hold of them. But basically they were examined the first days after the disaster, these 96. Then we started to do a more aggressive outreach. And, as you see, a response rate increased to 100 percent.

Now, the 20 persons that we got hold of here raising the response rate from 82 to 100 percent, you see that 8 are recruited into this group of low or no problems. But if you look at the number of severe PTSD cases, it has increased from 15 to 26, meaning that 11 out of the 20 last persons we got in suffered from severe PTSD. Most of these were males. Now, we did not have the same problem in getting women. So this was mainly -- it was not exclusively males, but most of them were males. And the reason, of course, is that avoidance is such a dominating reaction in traumatized disaster victims.

Well, maybe I should jump a bit here. In later disasters -- the last one was the Estonia ferry disaster which killed more than 1,000 people in September last year between Finland, Sweden, and Iceland. The number of women and children who died is very high.

When we studied another ferry disaster we had in 1990, which killed 159, we didn't find any such differences as far as I remember, but we did see that families died together. Up to seven family members died together. So this would indicate that if a mother and father could not escape, they were likely to die together with their children.

The side thing about the Estonia disaster is that from talking to the survivors, there was a lot of fighting. So I would hypothesize that the mortality risk of women in disasters where you have to struggle to survive over the limited possibilities of survival, you can see some very ugly things. This fighting was one of the reasons why in this particular disaster we had to be careful in using survivors in telling the bereaved families what really happened, which is what we otherwise usually do.

DR. CARDEÑA: Can you say more about the fighting, what they fight about? Is there -

DR. WEISÆTH: Well, to get out, out of closed spaces, to get onto rescue rafts and so on.

DR. URSANO: You might want to describe a little bit about the disaster, Lars. I'm not sure everybody recalls it.

DR. WEISÆTH: Oh, you mean the Estonia?

DR. URSANO: Yes.

DR. WEISÆTH: Well, since there were so few Norwegians on board, we were mainly involved in giving advice to the Swedish authorities whether this ship should be raised or not. Two Swedish prime ministers had promised that it should be done. They had an election at about that time. So the past prime minister had promised that this should be done, and also the new prime minister had promised that this should be done. But it turned out to be a very, very difficult affair technologically. And it would involve physical risk to divers and other groups of personnel because the bodies could not be retrieved by using divers. You had to raise the ship.

I was asked, then, to evaluate the stress impact on the body handlers, the divers, and the identification squads who would do this work which would last months. Our advice was that it couldn't really be done. We could not guarantee that this could be done in such a way that the psychological health of the people who would do it, would not be harmed. So these and the risk evaluation, the total risk evaluation, risk assessment made the Swedish government decide that the ferry should not be raised.

Of course, this was a sad message to many families. But a number of the families did not want someone to touch their death. They wanted this to be a grave, a wet grave. Well, the acceptability of a wet grave is much higher to Norwegians than to Swedes because we are a coastal nation.

Well, I don't think I'll go into the gender issue -- we haven't studied that. But I'll just remind you that in a disaster the unit to think from is the family unit. The search behavior that you see when families are separated, it's very difficult to evacuate a mother or father who is split from their children when they know that their children are in danger. And attachment ideation, the thinking that you find in people who are about to die, is very often concerned about their close ones. And, of course, this contributes to the convergence problem that people want to go to the site of an accident.

Let's see. Maybe I should jump over to the Chernobyl data. Here you find -- I can't explain this because it's really a complicated figure, and I hope you won't ask me questions about the statistics.

This is a statistical method called latent profile analysis. And, as far as I understand as a statistician, that means that the X-axis is sort of the outcome of a discriminant analytic function that has the strongest power to separate the groups, to spread the groups in. And the Y-axis is the discriminant function that is the second best related to spread the material. And what we are looking at is sex and education. These data are from May 1986, when Norway had more radioactive fallout from Chernobyl than any other country except Ukraine. And it's a nationwide survey. It's representative samples of adults above the age of 15 nationwide. Now, if you look at these axes, it's very close to the measurements, which include anxiety and depression. So, to make it simple, we could say this is the emotional axis. And if you look at these axes, it's close to what we call structuring variables.

The special problem in this type of disaster, as you know, is that the individual person cannot make out, cannot assess the danger. So you are so dependent upon information from others. So the main issue here is really: Do you trust the authorities? And this is what we have been studying since. What kind of authorities do people trust in radiation risk situations?

But the main finding, then, which I wanted to discuss with you, which was really surprising, I think, is that if you look at maids -- these are maids with high school-level education. These are the ones with what you would call junior college. And these are the university graduates. You see there is no increasing worry with education but, among women, you find an increase in anxiety and depression with increasing education, higher educational level. They found the same in Sweden. And what we believe, then, is that in a situation as sort of a crisis situation -- this was not a disaster yet -- if you are informed but cannot do anything, maybe that is a difficult sort of combination.

While men tend, perhaps, to use their knowledge about how to protect themselves from military training, they tend to enter a denial process, that is we felt that the men were not scared enough in proportion to the risk. The gender difference is really very striking. Women are closer to life in that they feel more threatened biologically (talking about genetic harms and so on) and also the caretaker role. Let me give you an example. A male physicist dressed in a gray suit appears on TV. And he is asked about what kind of precautions are the authorities mobilizing now. And he says, "Well, we have decided that the cows will have to be kept indoors for six weeks while children will play outdoors." Now, we found that 25 % of single mothers in Oslo didn't dare to let their children out. I think that kind of message can explain a part of the anxiety that we saw among particularly mothers who had no adult to speak to.

DR. ROSENBERG: Why should it be related to education among women? How do you explain that?

DR. WEISÆTH: You mean the increased worry?

DR. ROSENBERG: Yes.

DR. WEISÆTH: Well, I think because the guidance given had no instrumentality. It didn't say what you should do. So I think the passivity, the feeling of threat and the lack of control, being able to do something.

DR. POTH: You said that about mothers, but the implication is you're talking about gender, that fathers in that same situation -- I know you have single mothers because there was no male in the household. But did you try to look at the reaction of fathers to that same information?

DR. WEISÆTH: Well, single fathers you mean.

DR. POTH: No. Just any father.

DR. WEISÆTH: Yes. Well, they had a --

DR. POTH: It's sort of logical, I mean.

DR. WEISÆTH: They didn't have this kind of anxiety. But, you know, what we would really like to have done -- but this was a survey -- was to see whether the sex roles could explain some of this; for example, that mothers worry and that sort of influences the father to be strong and tough and maybe not share his worries with his wife.

So I think to understand more of this, one needs to do studies upon this. I mean, this is very superficial information. It's based on a survey. It's personal interviews at homes. But still it's of interest.

Now, from a practical point of view, then, the authorities are asking us if we must give a warning to a population in case of a new fallout? In order to get the males alarmed, must the message, then, be so strong that the anxiety level in the female population will be so high that we will see unwanted alarms? You know, this could be a problem.

So what we have been trying to do is we have done a new study in 1994. We asked the same questions in order to study the long-term effects and to try to define subgroups in the population so that you can use the local radio stations to tailor the information to the needs of that particular population. For example, if you are a sheep farmer in a part of Norway or a Laplander with reindeers, you have different information needs from if you are a single mother, for example, living in a big town.

DR. URSANO: One way to state this, number one, is it's a study of information stress. If, in fact, you're going to announce a disaster, --

DR. WEISÆTH: Yes.

DR. URSANO: -- what is its impact? What is the content of that? And the content of the information conveyed is important to which groups will respond in which ways. If the information given out is "Protect the cows," those people who have children may feel anxious.

DR. WEISÆTH: Oh, yes. Yes.

DR. POTH: He's assuming that that's the variable. I mean, you're assuming that it's information stress. I mean, you could also assume that everybody has the same data but has a different value system.

DR. URSANO: Absolutely. I would take either one of those as being information stress. In fact, I like that one much better than the others that it is the perception of what's given that becomes the important variable.

DR. POTH: Everybody's perception is accurate by their own --

DR. WEISÆTH: Imagine if a young female nuclear physicist had appeared on the screen and said that, "Well, in order to protect the children now, we have decided the following, that because there is iodine in the grass and the cows will eat that and concentrate this in the milk and children drink more milk than others and they have a thyroid gland which will concentrate this, to protect the children, we will keep the cows inside." These kind of caretaking messages we feel perhaps would be a better way of informing the population.

DR. URSANO: It is a similar topic, Lars, to one we talked about under not in terms of the gender effect, but the issue of the CBW. And if, in fact, one base were attacked by a chemical attack, how should the message be conveyed to the next base that will maximize optimal disaster or war behaviors to be adaptive and protective for the group?

DR. WEISÆTH: But what we need to do is to have better data on the education, not on the level, but more what branch you're working in, what type of education, to separate this from training. I mean, the fact that all the males here have gone through military training and maybe have more of a sense of mastery on what to do in a fallout situation.

Well, I thought I should share with you something that we still are working on. We have studied all the women who took part in the U.N. peacekeeping operation, which Norway contributed to, in Lebanon. We still are doing this, but we have studied the first 26 contingents. That is about 16,000 people, who have served about 23,000 service periods.

All roles in the military now are open to women, also combat roles -- in fact, last Monday, the first female submarine commander was appointed. We have had the first female infantry platoon commander serving. We have three female F-16 fighter pilots. And they are serving also as pilots on the Hercules, C-130, and also on the surveillance planes. This was decided in 1985 that all combat roles, all roles, actually, in the military, should be open for women. But we haven't been able to study how females do with regard to combat stress because they have not been involved in what you could call combat.

But, anyway, this is what we did. You get a complete register. Every person has served in various capacities, various types of military units. And then we selected a representative sample from each type of service, from each contingent. So we get a cross-sectional group. And then we compared that group with two other groups, namely everyone who had been repatriated, who had interrupted a service because of a health problem, social problems, or disciplinary problems. And then we had a matched control group to that repatriation group. In the same squad, we would have a matched sample, a matched person who had carried through the service.

So this is the first extensive study, really, of the effect of peacekeeping. And since we know so little about the role of women and the experiences of women in the armed forces, we decided to include all the women that served up to then, 312. And in the data bank, which we analyzed, 211 have answered.

You see the response rates are really not very impressive. We like the response rates in our study to be higher. This we had expected, of course. To be repatriated is difficult. So we have followed up on those who did not respond.

And then we used males as a control group for the female group. But I only mention this - it's not that I can report detailed findings on this. But this will be a study which will be carried out. So if you are interested in the effect of peacekeeping on women, we would invite you to make contact with our researchers who would be looking at this.

We have, however, done a prospective study of women. And the one finding which I will report here on that is that the name of this researcher is Line Lysbakken. She has interviewed all the female participants of our peacekeeping force in Lebanon before, during, and after the service. And she finds, like we did in UNIFIL studies, that they had fewer repatriations than the males but a somewhat higher score on the post-traumatic scales.

DR. CARDEÑA: Repatriation means what?

DR. WEISÆTH: Interruption of service before time.

DR. URSANO: Return back home for some reason.

DR. WEISÆTH: The one finding which we think is interesting here is that the women score very high on tests that measure what you call androgyneity. Is that what you call it?

DR. URSANO: Androgyny.

DR. WEISÆTH: Androgyny.

DR. URSANO: Yes.

DR. WEISÆTH: The female soldiers show high values on both the feminine and masculine dimensions, which indicate a high degree of androgyny among the women. Fifty percent of the women satisfy the androgyyny criteria while 17%fall within the feminine criteria, 10% within the masculine criteria. And 23% are in the nonspecific group. Now, in this sense they differ from the males. And we don't know why this is -- the population estimate predicts a sample distribution of 25%in the androgyny group. So we have twice as many women in the military forces in the peacekeeping activities that have high scores on this.

DR. ROSENBERG: How was androgyny measured? Is it attitudes or values or how?

DR. WEISÆTH: It's the -- what does it say? -- Bem's sex role inventory. Do you know that? They have also been tested on sensation-seeking scales. And, as you might expect, they have lower scores on adventure-seeking than the males, but they have the same on experience-seeking, somewhat lower on this inhibition, and the same on boredom susceptibility.

When I left Norway, I asked Line what she thought these findings could indicate. And she said, "We don't know whether this is a resource or a risk factor." So, in follow-up, we'll give us a chance to find out more about it. But she indicated that the high scores in a way, she said, "Perhaps it makes it possible for the women to adapt to military life," sort of the masculine atmosphere and hierarchy and all of that, while they retain their femininity.

DR. URSANO: Did the men also fill our, your comparison group also fill out, the scale?

DR. WEISÆTH: Yes, yes. And the scores among the men were -- let's see now. It's 33% satisfy the androgyny criteria, 22% within the masculine criteria, 16% within the feminine, and 27% within the non-specific group.

DR. POTH: How does that compare to population controls?

DR. WEISÆTH: Let's see. That I don't know. That I can't answer that.

DR. ROSENBERG: I don't know if it's related, but there's some earlier research reported, Melano-Macabee. It's old research showing that among children, highly creative girls and boys scored higher on androgyny than those judged less creative. Both seemed to converge.

DR. WEISÆTH: Yes. Well, anyway, I think it's an interesting finding to study the implication of and particularly to look at sort of the specifics of peacekeeping.

Here you see the risk of being repatriated, how much higher it is, the first three contingents. That had to do, of course, with the great problems in controlling the area. And also, I think, the first contingent had selection problems.

Now, the worrying finding we did hear is not related, really, to PTSD because the rates seem to be under five percent. And, basically, the findings are very positive. And the same for women and men. For example, 90% reported finding the service meaningful. And even of those who interrupted the service, 80% felt that it had been meaningful.

If you look at the kinds of experiences peacekeepers have, witnessing death is really not an infrequent event. Engaging in combat is not a very frequent thing, but it happens, while the three types of serious stressors that we have identified are: the exposure to danger without being allowed to retaliate and not being armed to retaliate. And the second is all the provocations, the constant provocations, partly to make you lose control so that you might do something that weakens the U.N. position. And the most difficult seems to be the witness experiences, where you're not allowed to intervene. So these are some of the specific stressors that we have to train the soldiers to cope with.

Now, as to post-traumatic stress symptoms, the finding was that service interrupted before term, those who had been repatriated had about 3 times as high scores on the scales rating post-traumatic stress symptoms on the average 6.6 years after the service but ranging from one to 13 years after.

Now, altogether if we looked at this group, they account for 30 percent of the total psychopathological load of this population of 16,000 at the follow-up. So, even if we concentrated all the work on that group, we would miss 70 percent of the total problem.

Those who were repatriated could be 72 percent of the variants there. It could be predicted by four factors. So, in a way, we feel we have some knowledge now that can tell us who should not be a peacekeeper, those who have a very strong introvert personality type to the degree that you would say that they have contact problems.

Now, why is that? We found the same when we studied sailors who were attacked serving on Norwegian tankers in the Gulf, being attacked from Iran during the Iran-Iraq War, that the risk of developing PTSD was much higher among those who had high scores on introversion scales.

So the combination of a personality trait, problems in childhood or adolescence -- and this was an index basis or a life event scale. And they also reported that they had less time when they were called in and were sent out on a mission. So maybe this can be of a help in selecting peacekeepers.

What we don't know yet is who can do peacekeeping without risking some psychological trauma with psychological effects upon them. And we don't know yet either who is the perfect peacekeeper? What kind of personality profile should you have?

And that's where we believe (and this is based mainly on clinical experience) that those who join the military to feed their self-esteem, their masculine pride and so on are likely, more likely, to develop problems here because you have to tolerate so much without having the chance to escape or to attack that the humiliation -- I mean, you must have a lot of self-respect since you are respected by no one else. So people with, let's say, narcissistic needs may perhaps run a high risk.

The worrying finding was when we looked at mortality. We have run the 16,000 towards the national register, so the entire population has been compared. And we got out all the deaths.

The quality of the death ratio is pretty good. So these data are I think pretty reliable. As expected, they have a low death rate due to natural deaths. This is compared, then, with sort of a matched group, a sex and age control. But if you look at the number of violent deaths and the number of suicides, this posed a problem. And, of course, this created a political debate of what does peacekeeping do for people. When we looked at what kind of violent deaths that they had suffered, there were all kinds of accidents and really didn't tell us much. And then we looked at when the deaths had occurred. Well, let's first look at natural death, from the homecoming until 14 years after.

Now, this would be the expected death rates. And, as you see, there is no dramatic concentration of deaths, while if we looked at, let's say, suicide, the numbers, are small and we have not done a psychological autopsy yet. We're going to do that. You should look closely at the two first years. You might say that the gradient here is a bit more steep.

DR. URSANO: This is years since repatriation or years --

DR. WEISÆTH: Yes, yes, years since end of service.

DR. POTH: These aren't repatriated, but these are all --

DR. URSANO: Yes.

DR. WEISÆTH: Yes, this is the total material. Now, I'm sure with your experience you already have many thoughts about this, what can account for this 14 percent higher rate of violent deaths.

If we go back and look at motivation (I'm sorry I haven't broken down this on women yet)--- If we look at motivation and hypothesize that perhaps to be a sensation seeker -- these are volunteers. So maybe if we have the higher proportion of sensation seekers, they are more active people. They would be more likely to suffer accidents.

These are retrospective measures about why they volunteer for these kinds of studies. So I don't know how accurate these figures then can be, but clearly to want excitement and danger and to look for new experiences were frequent types of motivations.

So that could be one possibility to explain this increased rate of accidental deaths, while I don't know if suicide rates are higher in sensation seekers. Are they?

DR. URSANO: They aren't in the military population as a whole. Now, I don't know about study of suicide rates in those deployed versus come back, but suicide rates among military and the Army are, in fact, lower than the nation. However, the VA has just published and Dr. Khang is publishing a study looking at mortality rates in Vietnam veterans. And they have found higher rates of accidental deaths in those who served in Vietnam than those who did not on a 20-year follow-up.

I don't know if we've looked at deployment as a specific suicide risk factor with such a low base rate.

DR. WEISÆTH: Of course, since we select, we should have much lower rates than the control group. So we feel this to be a problem. Now, the other possible explanations here would be that the time you volunteer for a U.N. mission, your life may perhaps not be in the best situation, this may represent an escape into military service.

And when we looked at the repatriation group and the number of life events they had before service and after, this seems to be a high-risk group. So, I think, the poor selection we had the first year can account for some of that.

DR. URSANO: Do people volunteer for UNIFIL duty?

DR. WEISÆTH: Yes.

DR. URSANO: But you have a conscription of mandatory national service?

DR. WEISÆTH: Yes.

DR. URSANO: But you can choose when you want to do it or there's some flexibility?

DR. WEISÆTH: No. You start serving when you're 19. And in the constitution it says that every citizen has this right, but so far it's been practiced only for males. But military service has been open for women. We had the draft for women during the war. So all the Norwegian women who were abroad and had escaped from occupied territory could be drafted into the forces. In 1947, they sort of closed military positions for women and had only civilian employees until the 1970s, when this was reversed again. And since then it has increased gradually. In 1985, Parliament accepted full equality of vocational opportunities between the sexes in the armed forces. Now, the goal is to have 15 percent of officers and soldiers being female.

DR. POTH: Well, we're there now.

DR. WEISÆTH: Yes. But we will not succeed in that.

DR. URSANO: What is it now?

DR. WEISÆTH: In April 1995 the total number of military women made up 3.1%. So what they have found was that we were not able to reach that goal. And there are various things, then, on the agenda to improve the recruitment of females.

I can mention that the number, the rate, of females applying for noncommissioned officer training has gone up from 12 to 19 percent of all applicants. The problem is that they don't start. They don't get into the school. So there is a loss of women. And, of course, one problem here is that we are reducing the number of military personnel overall by about 25%, like probably you are. So it's a difficult time to change the sex, the gender ratios.

Women have to volunteer. When they have gone through basic training, they sign a sort of contract of willingness so that they will be mobilized in case of war - just like the men. If you're interested, I have some information about the Army and the Navy and the Air Force and the role of the women in these forces. What is common and is seen as the main problem is the small number of women. They make up such a small group that, for example, the lack of role models and so on becomes something remiss.

DR. URSANO: What is the highest ranking woman at present?

DR. WEISÆTH: I think she's a colonel. There are no female generals.

Now, just as an anecdote, I did look at the sagas before I went to the U.S. And I found that when the Vikings tried to colonize Newfoundland in 8, I think, -- you know, they survived for some years there -- they had a female commander. Whenever the chieftain was away, his wife would be commander. So maybe that's the first female commander on your continent.

Another anecdote is how she fought Indians because she clearly must have used psychological war strategies. The story says that when she carried her spear, she would hang her breasts over the spear. And the Indians would think that she had penetrated her breasts. This would frighten them so much. So this is another anecdote.

But, of course, historically, the role of women in Norse society had been to prepare men for war. In fact, the word here is to egga. An egg is a part of the sword, the edge of the sword. That's the word.

So what else could I say? The --

DR. URSANO: Lars, all combat roles are open to women, --

DR. WEISÆTH: Yes.

DR. URSANO: -- which is not true here.

DR. WEISÆTH: Now, this woman who qualified to be a commander on this submarine last week, she had gone through a one-year training course. Norway is one of the few NATO countries where we have a special course to educate submarine commanders. She was one out of the five who passed that course.

We have also had the first women going through the Ranger course in the Army, which is an extreme stress. It's one week without sleep, very few calories, all kinds of physical and psychological stresses. I talked to the doctor who is in charge of that course. He said that, earlier they had found a dramatic reduction in testosterone, that, in fact, a stressed male becomes chemically female. So far, all the women who had gone through that course had had changes in their menstruation cycle. So you would be looking at what kind of changes in sex hormones can occur in women under these kind of extreme stress and --

DR. POTH: The androgens don't go up if that's what you're hypothesizing.

DR. WEISÆTH: No. Do you know this?

DR. URSANO: That's what the research is.

DR. POTH: Under extreme stress, whether it medical or psychological, both sex hormone systems go down. Hypothalamus seems to set down at the hypothalamic level. You get kind of a hypothalamic hypogonadism so that both males and females can become relatively hypogonadal. It's not that the males will become female and the females become male. It's more that they all become irrelevant.

DR. WEISÆTH: Yes. There's this question of --

DR. POTH: Lots of testosterone doesn't necessarily do as much as you might think it would. For example, 30% of males who are castrated report no change in their sex drive.

DR. URSANO: Kathy, have we had any women go through Ranger training, West Point students or something?

DR. WRIGHT: Not Rangers, but they've gone through some of the other selections and have done very well. But I don't know if they've been studied specifically with regard to hormonal changes.

DR. URSANO: Yes?

DR. WEISÆTH: Six percent of our peacekeepers now are women. So that's the kind of military service that has appeal to women. Forty-five percent of the labor force in Norway is made up of females. And, of course, then we have dual career couples, the same as I'm sure that you're familiar with. If you're interested in parental leave, parents are entitled to one-year parental leave with 80 percent of their normal salary. This is for everyone.

DR. ROSENBERG: That's for men and women?

DR. WEISÆTH: Yes.

DR. POTH: Both parents at the same time or one or the other?

DR. WEISÆTH: Well, alternatively, you can have 42 weeks with full pay after the child is born. The costs are covered by social insurance, not by the employers. The leave may be shared between the parents. And the father must take a minimum of four weeks. In the Armed Forces, we have observed that most men take the four weeks. Since1994, the leave may be used flexibly. So this is changed somewhat. The parents may save a certain number of months to be used later in the form of reduced working hours without loss of income. So far we have little experience with this so-called flexible leave.

DR. POTH: It's just like here.

DR. WEISÆTH: Yes. The U.N. decided that women would not be used in all U.N. positions. So that's why this has only recently happened. The reason for that was that they had fantasies that a female commander would not be respected in a Muslim country. But so far we have had no problem with this. Otherwise, when it comes to sexual harassment and problems with mixed crews and so on, probably the situation is like yours.

DR. URSANO: What about single parents, Lars? We have a higher number of female single parents than men, although it's prevalent in both. Are there special rules?

DR. WEISÆTH: Yes. Fathers, single fathers, since 90 percent will come from civilian life in case of mobilization (the total defense concept.) Single fathers may be excused now and also pregnancy. And if you --

DR. URSANO: Excused from service?

DR. WEISÆTH: Yes. Well, I mean in case of mobilization.

DR. URSANO: From mobilization?

DR. WEISÆTH: Yes. Let's see. They had that case in the Air Force where a helicopter pilot was pregnant. No, I don't think I -- if you want to, you can read about these details.

Norway is a country run by women. The Prime Minister, a woman, has been in office for 10 years and the majority of the cabinet members are women. But this is not yet reflected in the military. Forty percent of the Parliament are women, but in the military there is still a sort of reluctance. I guess the tradition of drafting only males to serve explains much of that. There has been a discussion of whether we should have a draft for women. I mean, full equality should involve draft for women. But at the moment with the reduced need for soldiers, it's not an actual policy.

DR. POTH: Is being a Member of Parliament considered to be a prestigious role?

DR. WEISÆTH: Oh, yes, very much. Yes. I guess it was a little of this and a little of that.

DR. CARDEÑA: I had a question about the suicide rates. You had the estimated account for the whole population, the actual curve. And you had the ones for the peacekeepers.

DR. WEISÆTH: Yes.

DR. CARDEÑA: Have you done an analysis just looking at males, for example, people who would have access and maybe knowledge about death? Can that account for some of that increased suicide? Maybe I can break it into two questions, actually. Do people that go there retain their weapons? Do they keep their gun and/or do they --

DR. WEISÆTH: See, Norway is the country in Europe with the most weapons in their homes because we are a mobilizing system. So if you are in the Home Guard, for example, you will have a weapon in your home. In fact, we have more weapons in the homes than the Swiss, not much less than you have. But the number of gunshot killings is very low, so that indicates that there is some kind of weapon discipline - that people have weapons for hunting or in case of a war, but it's not thought about as a private weapon.

Now, I don't remember the ways these people have killed themselves, but, of course, other -- I didn't finish that line of reasoning, I think. I mentioned that they could make up a special sample, let's say, of sensation seekers. The other hypothesis is that at the time they volunteered for the service, they had a difficult life situation.

And we had very few suicides during the service, only two suicides during the 16 years. Both came in social shame situations. So they were acute crisis situations (drunk driving, that kind of thing, being arrested for that, then coming home perhaps to the same hopeless life situation) to account for this somewhat higher rate, and, of course, PTSD.

DR. POTH: There's a lot of it up at 10 years. I don't think it went up by 10 years.

DR. WEISÆTH: The last part of that I don't think is reliable because the numbers are so few. So, although there's a steep increase, I think we have to be careful in interpreting.

DR. URSANO: Have you looked at depression in returning UNIFIL soldiers?

DR. WEISÆTH: Yes. We have measured that. That's on the stress-rating forms. I don't think that could explain all of this. Alcohol is a likely candidate because we have seen an increase in alcohol consumption during the service -- we have data on that -- because alcohol is very cheap. And, of course, in Norway alcohol is very, very expensive. And the number of people who continue to have a higher consumption of alcohol can account for some of this. So one of the conclusions here is that there should be a stricter alcohol policy in the international force, but that's difficult. I'm sure you will have the same problem. The French, your neighbor next door in the U.N. operation, has a very liberal policy. And, of course, in Serbia, and, perhaps in Bosnia and Croatia, by my guess, 80% of the fighting takes place while the people are intoxicated. I mean, the pressure to drink was tremendous.

One of the problems if you are in the U.N. is if you negotiate in the morning with, let's say, Serbs -- and to start any meeting with a drink is a part of the culture - you're not seen as friendly if you don't take a small glass of Slivovic. Now, that's very much contrary to our culture in the military, but people start doing these things.

DR. URSANO: It's a suggestion.

(Laughter.)

DR. URSANO: Thank you, Lars, for your presentation. It's always interesting and exciting to have an international perspective on problems that we sometimes think are only our own.